RECORD OF DECISION

Shieldalloy Metallurgical Corporation Superfund Site
Newfield, Gloucester/Cumberland Counties, New Jersey

Operable Unit 2: Soil, Sediment, Surface Water

United States Environmental Protection Agency

Region II
September 2014

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DECLARATION

SITE NAME AND LOCATION

Shieldalloy Metallurgical Corporation Superfund Site, (EPA ID# NJD002365930)
Borough of Newfield, Gloucester County and City of Vineland Cumberland County, New Jersey
Operable Unit 2 - Soil, Sediment and Surface Water

STATEMENT OF BASIS AND PURPOSE

This decision document presents the Selected Remedy to address contaminated soil, sediment and surface water at the Shieldalloy Metallurgical Corporation Superfund site located in the Borough of Newfield, Gloucester County and City of Vineland, Cumberland County, New Jersey. The remedy was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. § 9601-9675, and the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300. This decision is based on the Administrative Record established for this site. This decision is based on the Administrative Record established for this site.

EPA has organized the planned work into three operable units (OUs). The Selected Remedy for OU2 is intended to address soil, surface water and sediment at the site, including the Shieldalloy Metallurgical Corporation (SMC) facility and the Hudson Branch of the Maurice River, with the exception of the contaminant perchlorate, which will be addressed in a subsequent phase of the site cleanup.

The State of New Jersey New Jersey Department of Environmental Protection (NJDEP) concurs with the Selected Remedy. A copy of the concurrence letter can be found in Appendix IV.

ASSESSMENT OF THE SITE

The response action selected in this Record of Decision (ROD) for OU2 is necessary to protect public health or welfare and the environment from actual or threatened releases of hazardous substances from the site into the environment.

DESCRIPTION OF THE SELECTED REMEDY

The response action described in this document represents the second of three planned remedial phases, or operable units, described in this document. It addresses contamination in facility soil, sediment and surface water of the Hudson Branch. The Selected Remedy incorporates and builds upon earlier cleanup actions at the site.

The major components of the Selected Remedy include:

- Capping the 1.3 acres of vanadium- and chromium-impacted soils in the eastern storage areas of the facility that pose unacceptable risks to human health and ecological receptors.

- Establishing institutional controls in the form of deed restrictions/environmental easements and/or restrictive covenants on future uses of the facility to ensure that residential use is prohibited and to ensure that all existing covers/caps are not disturbed (for example, should a building be removed, the former building footprint must be paved to maintain existing cover/cap).

- Maintaining the existing security measures at the site (e.g., signage and fencing).

- Maintaining the existing covers/caps.

- Excavating approximately 9,800 cubic yards of Hudson Branch sediments to a depth of 12 inches in the channel and a depth of six inches outside the channel to meet remediation goals listed in the Remediation Goals section of this ROD and eliminate ecological risk. Depending on the results of the predesign investigation, an estimated 400 to 500 cubic yards of sediment may need to be excavated in the small "pond area" to meet remediation goals and eliminate ecological risk in that localized area (less than half an acre).

- Backfilling the excavated areas with clean material to match the surrounding grade and restoring, as necessary.

- Monitoring surface water in the Hudson Branch for vanadium until the NJDEP surface water quality standard of 12 micrograms/liter (ug/L) is met.

- Reviewing site conditions at least once every five years, as required by CERCLA.

- Performing further vanadium and hexavalent chromium delineation during the pre-remedial design phase in areas of the Lower Hudson Branch to identify areas that may require excavation.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy meets the requirements for remedial actions set forth in CERCLA Section 121, 42 U.S.C. § 9621 in regard to the following:

Part 1: Statutory Requirements

The Selected Remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective and utilizes permanent solutions and alternative treatment technologies (or resource recovery) to the maximum extent practicable.

Part 2: Statutory Preference for Treatment

The Selected Remedy for OU2 does not satisfy the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element for reasons explained in the Decision Summary.

Part 3: Five-Year Review Requirements

The Selected Remedy is protective for reasonably anticipated future uses, which do not anticipate unlimited use or unrestricted exposure for the facility. Because the remedy will result in hazardous substances, pollutants, or contaminants remaining on the site above levels that allow for unlimited use and unrestricted exposure, a statutory review under Section 121 (c) of CERCLA, 42 U.S.C. § 962l (c), will be conducted within five years after the date of initiation of the remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the administrative record file for the site.

- Chemicals of concern and their respective concentrations may be found in the “Site Characteristics” section;
- Baseline risk represented by the chemicals of concern may be found in the “Summary of Site Risks” section;
- A discussion of cleanup levels for chemicals of concern may be found in the “Remedial Action Objectives” section;
- A discussion of source materials constituting principal threats may be found in the “Principal Threat Waste” section;
- Current and reasonably anticipated future land use assumptions are discussed in the “Current and Potential Future Site and Resource Uses” section;
- A discussion of potential land uses that will be available at the site as a result of the Selected Remedy is found in the discussed in the “Current and Potential Future Site and Resource Uses” section;
- Estimated capital, annual operation and maintenance (O&M), and total present worth costs are discussed in the “Description of Alternatives” section; and

- Key factor(s) that led to selecting the remedy (i.e., how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision) may be found in the "Comparative Analysis of Alternatives" and "Statutory Determinations" sections.

Walter E. Mugdan, Director
Emergency and Remedial Response Division
U.S. Environmental Protection Agency
Region II

Sept. 25, 2014
Date

DECISION SUMMARY

1. SITE NAME, LOCATION AND BRIEF DESCRIPTION

The Shieldalloy Metallurgical Corporation (SMC) Superfund site, is located at 35 South West Boulevard, in the Borough of Newfield, Gloucester County, New Jersey, with a small portion of the southwestern corner located in the City of Vineland, Cumberland County, New Jersey. See Figure 1 of Appendix I.

The site, Superfund identification number is NJD002365930, is on the U.S. Environmental Protection Agency's (EPA's) National Priorities List (NPL). A responsible party is available and financially viable to conduct the remediation. EPA is the lead agency and the New Jersey Department of Environmental Protection (NJDEP) is the support agency.

The site comprises two parcels, the "SMC facility" and the "farm parcel," and the Hudson Branch, an intermittent stream that discharges into Burnt Mill Pond.

SMC Facility The larger parcel is approximately 67.5 acres in size. The coordinates of the center of the site are 39°32'27.6" North latitude and 75°01'06.7" West longitude. The facility is currently used by SMC as office space. Portions are also leased by SMC to various construction companies and to the Borough of Newfield for warehousing. The facility is secured by a locked perimeter chain link fence. The facility is bordered to the north by a rail spur and an inactive landfill; to the east by a wooded area, residences and small businesses; to the south by residences located along Weymouth Road; and to the west by Conrail rail lines, South West Boulevard, and various light industries and residences.

The SMC facility consists of four main areas, the *former production area, former lagoons area, eastern storage area and southern area*, as well as the *natural resource restoration areas.* Figure 2 of Appendix I is a current layout of the facility.

The *former production area* is approximately 22 acres and is the area where the majority of manufacturing activities occurred. This area is largely covered with buildings and asphalt or concrete pavement. A Stage II cultural resources survey was prepared for an on-site structure, the Specialty Glass Corporation Melting Tank, in compliance with the National Historic Preservation Act, which concluded that no cultural features of significance exist near the area to be remediated.

The *former lagoons area* occupies 4.5 acres. It includes nine lagoons that stored wastewaters and were closed by SMC between 1994 and 1997, with NJDEP oversight. Lagoon closure and remediation activities included sludge removal, liner removal, contaminated soil removal, post-excavation sampling, and backfilling. The former lagoons area is covered by a clean soil cover and light vegetation, which includes small trees and grass.

The *eastern storage area* had been used to store drums containing by-products of the manufacturing processes. A 1.3-acre portion of the eastern storage area is uncapped and covered with some gravel and concrete debris.

The *southern area* includes undeveloped areas, the on-site impoundment and the former thermal pond area. The on-site impoundment receives a combination of facility storm water and treated water from the on-site groundwater treatment system pursuant to New Jersey Pollutant Discharge Elimination System (NJPDES) permit requirements. The water from the on-site impoundment is directed into a ditch flowing toward the Hudson Branch. The on-site impoundment was installed by SMC in the early 2000s by excavating existing soils. The former thermal pond area covers 0.77 acres and consists of a rectangular depression, approximately three to five feet deep, that is covered with vegetation including grass and small trees. During facility operations, the former thermal pond was used as an emergency holding reservoir for treated wastewater. Several areas were developed and included in the natural resource restoration areas (discussed below). The remainder of the southern area is undeveloped and covered with a vegetated cap, grass and small trees.

The *natural resource restoration areas* are located in a non-contiguous collection of areas around the facility, generally focused on the eastern and southern areas and total nearly 10 acres. Remediation and restoration of these areas was governed by a 1997 Settlement Agreement of Environmental Claims and Issues by and between SMC and the United States (on behalf of the EPA) and the State of New Jersey (on behalf of NJDEP). In 1999 and 2000, caps comprised of clean soil and vegetation, including a variety of grass, flowers, trees and bushes, were constructed in these areas. These vegetative caps provide habitat value and eliminate the potential for exposure to contaminated soil.

Farm Parcel The smaller farm parcel is 19.8 acres of noncontiguous farmland in the City of Vineland approximately 2,000 feet southwest of the facility. The farm parcel has never been used for manufacturing activities. It is considered part of the site because it is land that was purchased by SMC for implementation of the OU1 remedy.

Hudson Branch The Hudson Branch, an intermittent stream, runs along the southern edge of the facility and discharges to Burnt Mill Pond. A small "pond area" exists on the Hudson Branch where water velocity slows and sediments accumulate.

The SMC facility and farm parcel are zoned industrial. The future land use of the site is anticipated to remain consistent with its current zoning. The site is located in a mixed residential, agricultural, commercial, and light industrial area. The closest residences are approximately 100 feet south of the facility. Burnt Mill Pond is used for recreational purposes. Groundwater is the primary source of drinking water in the area.

2. SITE HISTORY AND ENFORCEMENT ACTIVITIES

Specialty glass manufacturing began at the facility in the early 1900s. SMC purchased the facility in the early 1950s. From 1955 to 2006, SMC manufactured specialty steel and super alloy additives, primary aluminum master alloys, metal carbides, powdered metals and optical surfacing products at the facility. Production processes also included chromium metal, chromium oxide, vanadium pentoxide, ferro-vanadium, uranium oxide, thorium oxide, ferro-columbium and columbium nickel. General facility operations, product spills and wastewater discharges contributed to the contamination of the site.

Chromium contamination of the groundwater was first detected by NJDEP in 1970 in a Borough of Newfield municipal well and a private well. As a result, NJDEP directed SMC to perform groundwater investigations to determine the extent of the chromium contamination and to develop an appropriate remedial action. SMC purchased the farm parcel in 1970 to construct a recovery well as part of the groundwater extraction and treatment system. In 1979, SMC began pumping and treating chromium-contaminated groundwater.

In September, 1983, the SMC site was proposed for inclusion on the NPL pursuant to Superfund law. The site was added to the NPL in September 1984. In 1991, SMC completed a remedial investigation. The remedial investigation (RI) indicated that the groundwater, soil, surface water and sediments were contaminated with volatile organic compounds (VOCs) and metals. Supplemental RI activities were conducted in 1995 to delineate the extent of contamination. A feasibility study (FS) report was completed in 1996.

In September 1996, the NJDEP issued a ROD for operable unit (OU) 1 with EPA concurrence. The selected remedy includes modification of the existing groundwater remediation treatment system to optimize the capture of contaminated groundwater, air stripping to remove VOCs from the groundwater, electrochemical treatment with supplemental treatment methods, as needed, to remove inorganic contaminants, especially metals, and discharge of the treated groundwater to the surface waters of Hudson Branch. This remedy has been temporarily suspended while pilot studies are underway to evaluate ways to enhance the remediation of the groundwater contamination, consistent with the OU1 remedy. Enhancements were found to be necessary because an optimization study for OU1 concluded that groundwater concentrations had reached asymptotic conditions (steady state) for over 10 years.

Enforcement Activities

The NJDEP was the lead agency for the site until 2010 when the lead was transferred to the EPA. In 1984, NJDEP and SMC entered into an administrative consent order requiring SMC to investigate groundwater at the site and to address the plume of groundwater contamination. In 1988, NJDEP directed SMC to modify and upgrade its groundwater extraction and treatment system and to expand the groundwater monitoring program. Later in 1988, NJDEP and SMC signed a second administrative consent order requiring SMC to upgrade the groundwater extraction and treatment system, to perform a site-wide study of the soil, and to close nine lagoons. At NJDEP's direction, SMC also took a number of response actions that resulted in the excavation of the lagoons, the removal of above-ground and underground storage tanks, and the capping of the industrial areas of the site. Nearly all the developed portions of the site were eventually capped, except the eastern storage area. In 2006, TRC Environmental Corporation (TRC) executed a contract with SMC that ensures the existing building/paving and vegetative caps are maintained and that an appropriate deed notice would be implemented. Also in 2006, NJDEP entered into an administrative consent order with SMC and TRC for the completion of all Superfund cleanup activities at the site.

The EPA entered into administrative order on consent (2010 Administrative Order) with SMC and TRC in April 2010 to perform activities for OU2. Under the oversight of EPA, TRC initiated the supplemental RI in October 2011, which included sampling and analyzing of soil, sediment and surface water. The site characterization summary report (SCSR) completed in February 2013 includes all sampling results. The baseline human health risk assessment (BHHRA) and a baseline ecological risk assessment (BERA) were completed in February 2013. The draft final RI report, which summarizes the data and risk assessments, was approved by EPA in May 2014.

The 2010 Administrative Order also requires TRC and SMC to perform response activities in connection with OU1 and OU3. For OU1, the 2010 Administrative Order requires the continued performance of an appropriate (non-perchlorate) groundwater remedy. For OU3, the 2010 Administrative Order requires the completion of an RI/FS to address perchlorate at the site.

3. COMMUNITY PARTICIPATION

On June 27, 2014, EPA released the Proposed Plan and supporting documentation for the OU2 contaminated soil, sediment and surface water remedy to the public for comment. EPA made these documents available to the public in the administrative record repositories maintained at the EPA Region II office (290 Broadway, New York, New York 10007) and the Newfield Public Library, (115 Catawba Avenue, Newfield, New Jersey). EPA published a notice of availability for these documents in Vineland's The Daily Journal newspaper; posted the Proposed Plan on EPA's Region II website; and opened a public comment period on the documents from June 27, 2014 to July 28, 2014.

On July 9, 2014, EPA conducted a public meeting at the Edgarton Christian Academy to inform local officials and interested citizens about the Superfund process, to review the planned remedial activities at the site, and to respond to questions from area residents and other attendees. Responses to the comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary (see Appendix V).

4. SCOPE AND ROLE OF OPERABLE UNIT

As with many Superfund sites, the issues at the Shieldalloy Metallurgical Corporation site are complex. As a result, EPA has organized the planned work into three separate OUs.

- Operable Unit 1 (OU1): Non-perchlorate contamination in the groundwater at the site.

- Operable Unit 2 (OU2): Non-perchlorate contamination in the soil, surface water and sediment.

- Operable Unit 3 (OU3): Perchlorate contamination in the all media- soil, surface water, sediment and groundwater.

In September 1996, the NJDEP issued a Record of Decision (ROD) for OU1 with EPA concurrence. The selected remedy includes modification of the existing groundwater remediation treatment system to optimize the capture of contaminated groundwater, air stripping to remove VOCs from the groundwater, electrochemical treatment with supplemental treatment methods, as needed, to remove inorganic contaminants, especially metals, and discharge of the treated groundwater to the surface waters of Hudson Branch. This remedy has been temporarily suspended while pilot studies are underway to evaluate ways to enhance the remediation of the groundwater contamination, consistent with the OU1 remedy. It is anticipated that a ROD amendment will be issued for OU1 by fall 2015.

The second operable unit, OU2 is the subject of this ROD and addresses the non-perchlorate contamination present in soil, surface water and sediment. As described in Summary of Site Risks section of this ROD, contact with the contaminants of concern (COCs) present in the surface soil and sediments pose an unacceptable non-cancer risk to the future Construction/ Utility Worker, because concentrations of contaminants are present in soil above levels that pose risks above a hazard quotient of one. As also described in the Summary of Site Risks section of this ROD, sediment in the Hudson Branch and soil from the eastern storage area pose an unacceptable risk to ecological receptors from site contaminants. The main contaminants of concern for OU2 are chromium and vanadium in soil and sediment.

The third operable unit, OU3 is in the RI/FS phase. Perchlorate is both a naturally occurring and synthetically-made chemical that is used to produce rocket fuel, fireworks, flares and explosives. SMC used perchlorate in some of its manufacturing processes at the site. Remediation was originally separated into perchlorate and non-perchlorate segments by NJDEP, with concurrence from EPA. A remedy for OU3 is expected to be the final action for the site.

Radiological contamination in the “restricted area” on the SMC facility is not part of the Superfund site and is being addressed by NJDEP, as authorized by the U.S. Nuclear Regulatory Commission (NRC). The restricted area is surrounded by a chain link fence with barbed wire and is posted with specific signage. Inside the perimeter fence is a storage area with slag and dusts containing low levels of radioactive isotopes generated during past facility operations. Further information about the environmental response actions to address the restricted area is available from NJDEP.

5. SUMMARY OF SITE CHARACTERISTICS

5.1 Physical Characteristics of the Site

The site comprises two separate parcels: the SMC facility and the farm parcel and the Hudson Branch. The larger parcel is approximately 67.5 acres in size. The coordinates of the center of the site are 39°32'27.6" North latitude and 75°01'06.7" West longitude. The topography of the facility is relatively flat. The facility is located on a slight topographic high, with the ground surface at the site generally sloping to the west-southwest, toward the Hudson Branch stream.

As discussed above, the SMC facility consists of four main areas, the *former production area, former lagoons area, eastern storage area and southern area*, as well as the *natural resource restoration area*. Most of the facility is covered with buildings and asphalt or concrete pavement (Former Production Area). The other areas are covered with light vegetation, which includes small trees and grass (southern area, former lagoon area and the natural resource area). A 1.3-acre portion of the eastern storage area is uncapped and covered with some gravel and concrete debris. The facility is currently used by SMC as office space. Portions are also leased by SMC to various construction companies and to the Borough of Newfield for warehousing. The facility is secured by a locked perimeter chain link fence. The facility is bordered: to the north by a rail spur and an inactive landfill; to the east by a wooded area, residences and small businesses; to the south by residences located along Weymouth Road; and to the west by Conrail rail lines, South West Boulevard, and various light industries and residences.

5.2 Site Geology and Hydrogeology

Observations in numerous soil borings completed at the SMC facility are consistent with the regional surficial geology. Three surficial geologic units underlie the site, the Bridgeton Formation, Cohansey Formation and Kirkwood Formation. The Bridgeton Formation consists of up to 28 feet of brown sand. Below the Bridgeton Formation is the Cohansey Formation, which consists of coarse sands and little silt in the upper 40 feet and generally finer sand and some clay and silt lenses in the lower 60 to 80 feet. Below the Cohansey Formation is the Kirkwood Formation, which consists of a vertically confining gray clay and silt layer that was encountered at the site at 121 to 153 feet below ground surface. The thickness of the unsaturated soils ranges from a few feet near the Hudson Branch to 17 feet in the northern part of the site. Saturated soils are considered a component of OU1. Bedrock was not encountered during site investigations but is estimated at approximately 2,000 feet below ground surface (bgs).

The principal aquifer in the vicinity of the site is the Cohansey Sand, which is approximately 130 feet in saturated thickness. The upper portion of the Kirkwood Formation is composed of silt and clay, which functions as a confining unit in the vicinity of the site, restricting the downward flow of groundwater from the Cohansey Sand. Depths to groundwater across the site range from surface grade at the Hudson Branch to 17 feet bgs in the northwest quadrant of the site. Groundwater flow direction in the Cohansey Sand is southwest, which closely matches general site topography. The average linear on-site groundwater flow velocity in the shallow portion of the aquifer is about 2.9 feet/day. A downward hydraulic gradient has been observed in most on-site well clusters, which is consistent with groundwater pumping conditions at and downgradient of the site.

5.3 Surface Water and Wetlands

Surface water bodies at the site include the on-site impoundment, Hudson Branch and associated wetlands, and Burnt Mill Pond. Burnt Mill Branch is included to represent background conditions.

The on-site impoundment is located near the southwest corner of the facility and receives facility storm water and treated water from the onsite groundwater treatment system. There are two permitted outfalls related to the on-site impoundment that discharge to Hudson Branch.

The Hudson Branch is a small “losing” stream that discharges to both groundwater and Burnt Mill Pond. It originates just to the southeast of the facility and flows west/southwest. Downstream of the facility, the Hudson Branch flows to the southwest, under South West Boulevard, Weymouth Road, Arbor Avenue, and North West Avenue (via culverts), then flow discharges into Burnt Mill Pond. The portion of Hudson Branch from the Facility to North West Avenue is considered Upper Hudson Branch, for purposes of the remedial investigation; the portion of Hudson Branch from North West Avenue to Burnt Mill Pond is considered Lower Hudson Branch. There is an approximate 300 linear feet section of Hudson Branch that is broader (75 feet wide) between Arbor Avenue and North West Avenue, referred to as the “pond area.”

Near the facility, the Hudson Branch is relatively dry during much of the year but can be as deep as three and a half feet during rain events. The channel of the Hudson Branch is generally one to three feet wide, although along the southern boundary of the facility the branch becomes broader, expanding from 20 feet to as much as 100 feet wide.

Wetlands were delineated along the Hudson Branch in the vicinity of the site. The delineation included the site and the Hudson Branch from the headwaters, past the Farm Parcel, up to and including Burnt Mill Pond. The width of the wetlands ranges from approximately five feet along the Facility boundary to more than 400 feet near the southwest corner of the facility. At a number of points along Hudson Branch, the wetland vegetation consists of phragmites, which is an invasive plant species generally considered to provide low quality habitat. Higher quality, native wetlands vegetation includes overstory red maple, pine oak, sweet gum, black willow, green ash and white ash, and understory species dominated by ferns.

Burnt Mill Pond, a man-made waterbody, is located approximately one and a quarter miles southwest of the SMC Facility and receives discharge from Hudson Branch and Burnt Mill Branch. Burnt Mill Pond is reported to be shallow, with a mean depth of 2.4 feet, encompasses 15 acres when full and is impounded by a dam. In 2011, the NJDEP’s dam safety group indicated that the dam presented threat of failure and directed the City of Vineland (the owner of the pond) to drain the pond and study the dam. Burnt Mill Pond is located in a municipal park used for recreation.

Burnt Mill Branch (sometimes referred to as the Manaway Branch) generally flows north to south and discharges into Burnt Mill Pond. Burnt Mill Branch is located approximately 4,000 feet west of the site. The headwaters of Burnt Mill Branch begin approximately 7,000 feet northwest of the site. Burnt Mill Branch does not receive waters from the site.

6. NATURE AND EXTENT OF CONTAMINATION

6.1 Soil Contamination

One hundred ninety-six surface and subsurface soil samples were collected from the facility between 1990 and 2012. Soil samples were collected across all site areas. Because earlier response actions included the removal of contaminated soils from lagoon areas and the capping of developed portions of the facility, the OU2 Supplemental RI/FS sampling included a mixture of confirmatory sampling (to demonstrate that these earlier actions were sufficient to remove soils associated with unacceptable levels of exposure) and sampling in areas where no previous response measures had been taken. The soil samples were analyzed for VOCs, semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs) and metals. Chromium is of significant interest for OU2 due to its presence as a result of site activities and the toxicity associated with specific forms, and was analyzed extensively. The speciation of chromium (hexavalent versus total chromium) was studied in order to delineate the nature and extent of contamination. In general, analyses targeted *either* hexavalent chromium *or* total chromium, depending on the appropriate screening criteria for the appropriate media (i.e. most soils were analyzed for hexavalent chromium because most screening criteria are based on hexavalent chromium, whereas most sediment samples were analyzed for total chromium), although there are a number of instances where both species were analyzed. Hexavalent chromium generally does not exist at significant concentrations in sediments because stream tend to have reducing environments which favor the trivalent form of chromium.

The analytical results for the soil samples were screened against the more stringent (lower) of the New Jersey non-residential direct contact soil remediation standards (NRDCSRS), the EPA regional screening levels (RSLs), and the New Jersey chromium policy (2007).

The levels of concern for hexavalent chromium are the policy value of 20 milligrams per kilogram (mg/kg) and the RSL for industrial/commercial land use of 5.6 mg/kg. Detections of hexavalent chromium were screened against the more stringent value of 5.6 mg/kg. Hexavalent chromium was detected in 28 of 196 soil samples at levels greater than 5.6 mg/kg. The highest hexavalent chromium detected was 58.3 mg/kg in a sample collected from a lagoon in 1995. The highest concentration detected during the supplemental remedial investigation in 2011-2012 was 24 mg/kg in a sample collected in the former production area.

Vanadium is also of significant interest for OU2. Vanadium was analyzed as "vanadium," but, for purposes of the human health risk assessment work, vanadium was conservatively considered to be vanadium pentoxide, which is a more toxic form. The levels of concern for vanadium are the NRDCSRS of 1,100 mg/kg and the RSL of 5,100 mg/kg for industrial/commercial soil. Detections of vanadium were screened against the more stringent value of 1,100 mg/kg. Vanadium was detected in 18 of 182 soil samples at levels greater than 1,100 mg/kg, with the highest vanadium concentration of 12,100 mg/kg detected in a sample collected in the southern area.

The levels of concern for arsenic are the statewide background concentration of 19 mg/kg and the RSL of 2.4 mg/kg for industrial/commercial soil. Detections of arsenic were screened against the more stringent value of 2.4 mg/kg. Arsenic was detected in two out of 193 samples at concentrations at levels greater than 2.4 mg/kg. Arsenic was detected at 43.1 mg/kg and 69.8 mg/kg, in samples collected from the former production area in 1995.

VOCs were not detected in any of the 196 soil samples above the more stringent of the NRDCSRS or RSL for industrial/commercial soil for each VOC.

The levels of concern for benzo(a)pyrene are the NRDCSRS of 0.2 mg/kg and the RSL of 21 mg/kg for industrial/commercial soil. Detections of benzo(a)pyrene were screened against the more stringent value of 0.2 mg/kg. Benzo(a)pyrene was detected in only one of 48 soil samples collected at the facility above 0.2 mg/kg, at a concentration of 0.42 mg/kg from a sample collected from the former production area in 1990. In 1995, a second sample collected from the same location yielded a result below the NRDCSRS, and, since no other samples indicated the presence of benzo(a)pyrene, it was determined that the first result was a false positive. Therefore, benzo(a)pyrene was not analyzed further during the remedial investigation.

Total polychlorinated biphenyls (PCBs) were detected in only one of 64 samples collected at the facility above the NRDCSRS of 1.0 mg/kg. Total PCBs were measured in a sample collected from the eastern storage areas at 3.4 mg/kg in 1990. Due to the low frequency of detection and the relatively low concentration, PCBs were not evaluated further during the supplemental remedial investigation.

Pesticides were detected in three of 45 soil samples collected at the facility above the NRDCSRSs. The pesticides were detected in a sample collected from the former production area and two samples collected from the eastern storage areas in 1990. Samples were collected from these same locations in 1995 and pesticides were not detected. Due to the low frequency of detection and the more recent non-detections, pesticides were not evaluated further during the supplemental remedial investigation.

Facility Soils: Impact to Groundwater

The potential for non-perchlorate contamination in groundwater is being addressed by OU1. The potential for OU2 soils to act as a continuing source of groundwater contamination was evaluated as part of the OU2 supplemental remedial investigation by comparing facility soils data to generic NJDEP Impact to Groundwater (IGW) values for ten metals, arsenic, cadmium, lead, mercury, silver, beryllium, nickel, manganese, aluminum and antimony. The comparison indicates that the concentrations of all ten metals exceeded the IGW values. Five metals in facility soils (arsenic, cadmium, lead, mercury and silver) are not adversely currently impacting groundwater. The remaining five metals (beryllium, nickel, manganese, aluminum and antimony) are affecting groundwater locally near the facility; however, data collected at the site upgradient of the farm parcel shows that concentrations in groundwater of four of the five metals (beryllium, nickel, manganese and aluminum) are below the New Jersey Ground Water Quality Standards, New Jersey Administrative Code (NJAC) 7:9C (NJGWQS) indicating that they may be naturally attenuating.

The remaining metal, antimony, exceeded NJDEP's IGW value in some samples. The OU2 supplemental remedial investigation evaluated the potential for antimony in soil to act as a source of local groundwater contamination. The remedial investigation concluded that elevated levels of antimony in soil are not associated or co-located with elevated levels of antimony in groundwater, suggesting that natural soil constituents such as iron and aluminum oxide are assisting in the natural attenuation of antimony.

Vanadium does not have an NJDEP IGW value; however, the potential for vanadium to migrate through soil and into groundwater was also evaluated, due to the presence of vanadium in site soils and elevated concentrations of vanadium historically detected in groundwater in localized areas beneath the facility. Recent sampling data shows that vanadium in shallow groundwater immediately downgradient of the facility was either not detected or was present at concentrations below the EPA tap water screening levels for vanadium compounds.

As stated previously, VOCs were not detected in facility soils and it was concluded that OU2 soils are not a continuing source of VOCs in groundwater.

In summary the RI concluded that metals contamination in soils does not act as a source of contamination to groundwater. However, because these ten metals exceed the NJDEP IGW values, they will continue to be monitored as part of the OU1 remedy to confirm that they do not impact the ground water or that they naturally attenuate in groundwater in compliance with the NJGWQS. Although there is no NJDEP IGW value for vanadium, it will also continue to be monitored as part of the OU1 remedy to confirm that it naturally attenuates in groundwater.

6.2 Surface Water and Sediment Contamination

6.2.1 On-Site Impoundment

Surface water samples are collected on a monthly basis as part of the on-site groundwater treatment system monitoring. The data showed no exceedances of either the 2009 EPA National Recommended Water Quality Criteria or the 2006 EPA Region III Biological Technical Assistance Group Freshwater Screening Benchmarks. These values are risk-based, and have been developed to screen contaminants for both human and ecological receptors. Therefore, surface water in the impoundment was not evaluated further in the remedial investigation.

Six sediment samples were collected from the on-site impoundment to evaluate the sediment conditions in this area. The samples collected were analyzed for SVOCs, pesticides, PCBs, metals, total organic carbon, particle size and pH. The results were compared to the New Jersey ecological screening criteria (ESCs). PCBs were detected in two sediment samples exceeding the ESCs. Metals detected above the ESCs included arsenic, chromium, iron, lead and nickel. Chromium had the highest percent of detections above the ESC.

6.2.2 Hudson Branch

The Hudson Branch is classified by NJDEP as Fresh Water 2 (FW2). The designated uses of FW2 surface waters include maintenance, migration and propagation of the natural and established biota; primary contact recreation; industrial and agricultural water supply; and public potable water supply after conventional filtration treatment and disinfection. In addition to the FW2 classification, the Hudson Branch is designated as NT, non-trout waters. These waters are generally not suitable for trout because of their physical, chemical or biological characteristics, but are suitable for a wide variety of other fish species.

During the supplemental remedial investigation, surface water and sediment samples were collected from locations along seven transect lines perpendicular to the Hudson Branch. Samples were analyzed for VOCs and metals, including total chromium and hexavalent chromium. The concentrations were considerably lower than those detected during previous investigations, indicating that the early response actions (capping and excavating the lagoons) have addressed much of the on-site contamination that acted as a continuing source to surface water.

A total of seven surface water samples were collected and the results were compared to the New Jersey Surface Water Quality Standards (SWQS). No VOCs were detected in the surface water samples. Iron and vanadium were detected in surface water at concentrations exceeding the SWQS and above concentrations in background samples. Since vanadium generally has low solubility, it is suspected, based the fact that vanadium concentrations in surface water achieve non-detect concentrations in Burnt Mill Pond, that the vanadium concentration detected in surface water may be related to suspended sediment in surface water.

A total of 26 sediment samples were collected at several depths. In general, the shallow sediment samples were collected from the top six inches below the water-sediment interface, while deeper samples were collected from the depth intervals of 1.5 to 2.0 feet and 2.5 to 3.0 feet. SVOCs, pesticides, PCBs and metals were detected in the shallow depths at concentrations exceeding the ecological screening criteria (ESC). Chromium had the highest percent of detections above its ESC, although other metals were detected in shallow sediment samples exceeded their respective ESCs, including antimony, arsenic, cadmium, copper, iron, lead, manganese, mercury, nickel and zinc. The highest chromium concentrations (up to 10,400 mg/kg) in Hudson Branch channel sediments occur near the south central portion of the site, and generally decrease along Hudson Branch, moving downstream away from the site. Further, concentrations tend to decrease after

Hudson Branch flows through a culvert. This trend is consistent with the depositional tendencies of the stream (the tendency of sediments to settle out as water backs up upstream of the culvert). It is believed that the culverts under Southwest Boulevard and Weymouth Road restrict the water flow, allowing sediments to settle out upstream. So the area upstream of these roads is considered a depositional area and contains the greatest chromium mass.

In order to understand the distribution of each of the metals relative to the other metals, and relative to location in Hudson Branch, the concentrations of metals in shallow sediment was plotted along the Hudson Branch centerline, as shown in Figure 3 of Appendix I. Review of this figure indicates that the metals are co-located (generally, high metal concentrations occur at similar parts of Hudson Branch), and that total chromium has the highest metal concentrations. From a characterization perspective, this would indicate that chromium is considered the "indicator" contaminant in sediments.

SVOCs, pesticides, PCBs and metals were detected in the deeper horizons at concentrations exceeding the ESCs. Contaminant concentrations decrease significantly with depth. Sediment sampling in the small "pond area" showed detections of chromium, nickel and vanadium at concentrations exceeding the ESCs.

A total of 26 stream bank soil samples were collected at specific locations (top of bank on each side of the stream for the seven transect lines) in the Hudson Branch.

Semi-VOCs, PCBs, hexavalent chromium, vanadium, and arsenic were detected in several stream bank samples exceeding the NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS). No pesticides were detected in the samples exceeding the RDCSRS. The areas where samples exceed RDCSRS include the broader area of Hudson Branch, south of the site's southern fence line. Exceedances were also observed in a few samples collected from flood areas southwest of Weymouth Road. Based on the hydrology and topography of these areas, it is believed that these broader areas of Hudson Branch are more depositional in nature, and have generally retained more sediment laden with metals.

6.2.3 Burnt Mill Branch

Eight background surface water samples were collected and analyzed from the Burnt Mill Branch upstream from Burnt Mill Pond. Aluminum, barium, iron, lead, manganese and mercury were detected in eight surface water samples at concentrations exceeding the SWQS.

Eight background sediment samples (top six inches) were collected and analyzed from the Burnt Mill Branch upstream from Burnt Mill Pond. Cobalt, copper, iron, lead, manganese, mercury, nickel and zinc were detected in all sediment samples collected from the Burnt Mill Branch at concentrations exceeding the ESCs.

6.2.4 Burnt Mill Pond

Four surface water samples were collected and analyzed from the Burnt Mill Pond prior to its draining by the City of Vineland. Aluminum, iron, manganese and vanadium were detected in three of the four surface water samples at concentrations exceeding the SWQS. The historical and recent OU2 supplemental remedial investigation data show that concentrations of metals in surface water samples have decreased significantly in the Burnt Mill Pond.

Four sediment samples (top six inches) were collected from Burnt Mill Pond prior to draining. Chromium, copper, manganese, mercury and nickel were detected in all sediment samples collected from the Burnt Mill Pond at concentrations exceeding the ESCs.

7. CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Much of the former manufacturing area is covered in buildings or pavement. Generally, there is a very small staff remaining at the facility, which includes administrative and maintenance personnel. Additionally, SMC leases space to tenants. The tenants currently include a construction company, the Borough of Newfield (storage of municipal vehicles), and an emergency response company. Current access to the SMC site is restricted at the road by a gate and a guard. The restricted area is surrounded by chain link fence, which is topped by barbed wire. A portion of the undeveloped SMC site, south of the southern fence, is unrestricted and, therefore accessible to trespassers. The 2011 Conceptual Site Model (CSM) prepared by TRC assumes the usage of the facility will remain the same (industrial/commercial), and SMC still intends on maintaining industrial uses at the site.

8. SUMMARY OF SITE RISKS

TRC completed a BHHRA and a BERA for the site. These risk assessments were based on the CSM developed for the site and environmental sampling data collected during the RI. The risk assessments evaluate and determine the risk posed by site contaminants to humans and ecological receptors. The risk assessments provide the basis for taking action and identify the contaminants and exposure pathways that need to be addressed by the remedial action.

8.1 Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios, as follows.

> *Hazard Identification* – uses the analytical data collected to identify the contaminants of potential concern (COPCs) at the site for each medium, with consideration of a number of factors explained below.

Exposure Assessment – estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (*e.g.*, ingesting contaminated soil) by which humans are potentially exposed.

Toxicity Assessment- determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of effect (response).

Risk Characterization – summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks. The risk characterization also identifies contamination with concentrations that exceed acceptable levels, defined by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) as an excess lifetime cancer risk greater than 1×10^{-6} - 1×10^{-4} or a Hazard Index greater than 1.0; contaminants at these concentrations are considered COCs and are typically those that will require remediation at the site. Also included in this section is a discussion of the uncertainties associated with these risks.

8.1.1 Hazard Identification

In this step, analytical data collected during the RI was used to identify COPCs in the soil, sediment and surface water at the site based on factors such as toxicity, frequency of occurrence, fate and transport of the contaminants in the environment, concentrations of the contaminants as well as their mobility and persistence.

Surface and subsurface soil, sediment and surface water samples were collected in 2011 and 2012 as part of the supplemental remedial investigation. A comprehensive list of all site COCs can be found in the Table 2 series of the February 2013 *Revised Draft Baseline Human Health Risk Assessment (Operable Unit 2)* report.

8.1.2 Exposure Assessment

In this step, the different exposure scenarios and pathways through which people might be exposed to the contaminants identified in the previous step were evaluated.

Consistent with Superfund policy and guidance, the BHHRA is a baseline human health risk assessment and therefore assumes no remediation or institutional controls (ICs) to mitigate or remove hazardous substance releases. Cancer risks and non-cancer hazard indices were calculated based on an estimate of the reasonable maximum exposure (RME) expected to occur under current and future conditions at the site. The RME is defined as the highest exposure that is reasonably expected to occur at a site.

The exposure assessment identified potential human receptors based on a review of current and reasonably foreseeable future land use at the site. The Shieldalloy site is located in the Borough of Newfield, with the Hudson Branch and Burnt Mill Pond extending into the City of Vineland, in Gloucester and Cumberland Counties in New Jersey. Land use surrounding the site is primarily rural with some commercial, industrial and residential properties; however, the site is currently zoned industrial, and the reasonably anticipated future use is expected to remain so.

Based on information gathered during the RI such as zoning and demographic information, several exposure scenarios for the site were selected. For the current land use scenario, the following exposure scenarios were evaluated:

- Adolescent recreational trespassers contacting/ingesting surface soil and/or inhaling fugitive dust.
- Adolescent recreational trespassers contacting/ingesting surface water and sediment from two on-site impoundments, Hudson Branch and/or Burnt Mill Pond.
- Adult on-site workers contacting/ingesting surface soil and/or inhaling fugitive dust.
- Adult utility and construction workers contacting/ingesting surface/subsurface soil and/or inhaling fugitive dust.

For potential future land uses, the following exposure scenarios were evaluated:

- Adolescent recreational trespassers contacting/ingesting on-site and off-site surface soil and/or inhaling fugitive dust.
- Adolescent recreational trespassers contacting/ingesting surface water and sediment from two on-site impoundments, Hudson Branch Stream and/or Burnt Mill Pond.
- Adult utility and construction workers contacting/ingesting surface/subsurface soil and/or inhaling fugitive dust.
- Adult and young child on-site residents contacting/ingesting surface soil and/or inhaling fugitive dust.

Table 2 of Appendix II presents all exposure pathways considered in the BHHRA, and the rationale for the selection or exclusion of each pathway.

8.1.3 Toxicity Assessment

In this step, the types of adverse health effects associated with contaminant exposures and the relationship between magnitude of exposure and severity of adverse health effects were determined. Potential health effects are contaminant-specific and may include the risk of developing cancer over a lifetime or other non-cancer health effects, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some contaminants are capable of causing both cancer and non-cancer health effects.

Under current EPA guidelines, the likelihood of carcinogenic risks and non-cancer hazards due to exposure to site chemicals are considered separately. Consistent with current EPA policy, it was assumed that the toxic effects of the site-related chemicals would be additive. Thus, cancer and non-cancer risks associated with exposures to individual COPCs were summed to indicate the potential risks and hazards associated with mixtures of potential carcinogens and non-carcinogens, respectively.

Toxicity data for the human health risk assessment were provided by the Integrated Risk Information System (IRIS) database, the Provisional Peer Reviewed Toxicity Database (PPRTV), or another source that is identified as an appropriate reference for toxicity values consistent with the May 2013 Tier 3 Toxicity Value White Paper (http://www.epa.gov/oswer/riskassessment/pdf/tier3-toxicityvalue-whitepaper.pdf). Non-cancer toxicity values can be found in Table 3 of Appendix II (cancer toxicity values are not provided as there was no unacceptable carcinogenic risk for this operable unit). Additional toxicity information for all COPCs is presented in the Table 5 and 6 series of the February 2013 Revised Draft BHHRA.

8.1.4 Risk Characterization

This step summarized and combined outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks. Exposures were evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards.

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogen, using the cancer slope factor (SF) for oral and dermal exposures and the inhalation unit risk (IUR) for inhalation exposures. Excess lifetime cancer risk for oral and dermal exposures is calculated from the following equation, while the equation for inhalation exposures uses the IUR, rather than the SF:

Risk = LADD x SF

Where: Risk = a unitless probability (1×10^{-6}) of an individual developing cancer
LADD = lifetime average daily dose averaged over 70 years (mg/kg-day)
SF = cancer slope factor, expressed as [1/(mg/kg-day)]

The likelihood of an individual developing cancer is expressed as a probability that is usually expressed in scientific notation (such as 1×10^{-4}). For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk;" or one additional incidence of cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions explained in the Exposure Assessment. Current Superfund guidelines for acceptable exposures are an individual lifetime excess cancer risk in the range of 10^{-4} to 10^{-6} (corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk) with 10^{-6} being the point of departure.

For non-cancer health effects, a hazard index (HI) is calculated. The HI is determined based on a comparison of expected contaminant intakes and benchmark comparison levels of intake (reference doses, reference concentrations). Reference doses (RfDs) and reference concentrations (RfCs) are estimates of daily exposure levels for humans (including sensitive individuals) which are thought to be safe over a lifetime of exposure. The estimated intake of chemicals identified in environmental media (*e.g.*, the amount of a chemical ingested from contaminated drinking water) is compared to the RfD or the RfC to derive the hazard quotient (HQ) for the contaminant in the particular medium. The HI is obtained by adding the hazard quotients for all compounds within a particular medium that impacts a particular receptor population.

The HQ for oral and dermal exposures is calculated as below. The HQ for inhalation exposures is calculated using a similar model that incorporates the RfC, rather than the RfD.

HQ = Intake/RfD

Where: HQ = hazard quotient
Intake = estimated intake for a chemical (mg/kg-day)
RfD = reference dose (mg/kg-day)

The intake and the RfD will represent the same exposure period (*i.e.*, chronic, subchronic, or acute).

The key concept for a non-cancer HI is that a "threshold level" (measured as an HI of less than 1) exists below which non-cancer health effects are not expected to occur.

The HI is calculated by summing the HQs for all chemicals for likely exposure scenarios for a specific population. An HI greater than 1 indicates that the potential exists for non-carcinogenic health effects to occur as a result of site-related exposures, with the potential for health effects increasing as the HI increases. When the calculated HI exceeds 1 for all chemicals for a specific population, separate HI values are then calculated for those chemicals which are known to act on the same target organ. These discrete target organ-specific HI values are then compared to the acceptable limit of 1 to evaluate the potential for non-cancer health effects on a specific target organ or system. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media.

All evaluated receptors demonstrated cancer risks that were within EPA's acceptable range.

Non-cancer risks are summarized in Table 4 of Appendix II. Exposure to vanadium (as vanadium pentoxide) in on-site soils posed an unacceptable human health hazard to the future adult construction worker (combined surface/subsurface soils) through the inhalation route and future on-site child resident (surface soils) through the ingestion route.

It is anticipated that the proposed remedy will reduce exposure to vanadium in on-site soils, resulting in reduced risks to adult construction workers and hypothetical child. Since contamination above levels appropriate for unlimited use and unrestricted exposure will remain on the site, continued monitoring will be performed.

Exposure to the sediments and surface water of Hudson Branch and Burnt Mill Pond were also estimated and both non-cancer hazards and cancer risks were within acceptable levels. The parameters used to characterize exposure to the sediments of Burnt Mill Pond were developed based on assumptions to identify the reasonable maximum exposure anticipated for contact with these sediments. In an attempt to reduce the uncertainty associated with exposure to the sediments, and with consideration of exposure to the sediments while the pond is dry, the exposure was re-evaluated using more conservative estimates to evaluate both non-cancer hazards and cancer risks. These risks were also found to be within acceptable levels. This reevaluation is documented in the *Human Health Risk Assessment Addendum*, dated August 12, 2014, which can be found in the administrative record for this site.

Uncertainty in the Risk Assessment

The process of evaluating human health cancer risks and non-cancer health hazards involves multiple steps. Inherent in each step of the process are uncertainties that ultimately affect the final risks and hazards. Important site-specific sources of uncertainty are identified for each of the steps in the four-step risk process below.

Uncertainties in Hazard Identification

Uncertainty is always involved in the estimation of chemical concentrations. Errors in the analytical data may stem from errors inherent in sampling and/or laboratory procedures. Additional COC identification uncertainties include the following.

Chromium was not speciated to discern between hexavalent (VI) and trivalent (III) chromium in the most recent sediment analytical samples. Chromium VI is the more toxic form of chromium. As a health-protective approach, total chromium was therefore evaluated as chromium VI in sediments in the HHRA. This is highly conservative and overestimates risk due to exposure to chromium in sediments. In most soils and sediments, chromium will be present predominantly in the chromium III oxidation state (Agency for Toxic Substances and Disease Registry (ATSDR) 2008). If the sediment concentrations of total chromium were screened against the chromium III RSL, rather than the chromium VI RSL, chromium would not be included in the HHRA as a COPC.

Chromium VI was selected as a COC in surface water due to an elevated sample quantitation limit (SQL) (10 micrograms/liter (ug/L)) above the residential tapwater RSL of 0.031 ug/L. Due to the uncertainty associated with the actual concentration of chromium VI in surface water, a value of one-half the SQL (5 ug/L) was chosen as the exposure point concentration (EPC). Since the potential concentration range of chromium VI in surface water can range from 0 to 10 ug/L, use of 5 ug/L provides a useful estimate of the concentration. Chromium VI was not detected in any surface water sample above the SQL of 10 ug/L. Therefore, the use of one-half the SQL likely overestimates risk.

Uncertainties in Exposure Assessment

There are two major areas of uncertainty associated with exposure parameter estimation. The first relates to the estimation of EPCs. The second relates to parameter values used to estimate chemical intake (e.g., ingestion rate, exposure frequency). The following are examples of each.

In those cases where there were either an insufficient number of samples or an insufficient number of detected samples within a dataset to calculate an upper confidence limit (UCL) using

ProUCL; the maximum detected concentration was used in characterizing risk. The use of the maximum detected concentration as the EPC likely overestimates risk.

For all exposure scenarios and pathways, the RME exposure assumptions incorporated into the Revised Draft OU2 BHHRA are intended to be conservative (i.e., health protective) and likely overestimate the potential exposures and risks.

Uncertainties in Toxicity Assessment
A potentially large source of uncertainty is inherent in the derivation of the EPA toxicity criteria (i.e., RfDs, RfCs, SFs). Additionally, the following site-specific toxicity uncertainty was identified.

Seven compounds (methylcyclohexane, 4-nitrophenol, carbazole, dimethyl phthalate, niobium, titanium, and zirconium) detected in site media do not have toxicity criteria and were not quantitatively evaluated, therefore potentially resulting in an underestimation of total risk.

Uncertainties in Risk Characterization
When all of the uncertainties from each of the previous three steps are added, uncertainties are compounded. Since the risk assessment made mostly conservative assumptions, the overall risk assessment for this operable unit likely overestimates risks and hazards as a result of exposure to the site.

It is worth noting that the site was separated into three operable units for ease of contaminant investigation and remedy selection. As a result, risks resulting from exposure to contaminants in groundwater and perchlorate in all media are not quantitatively summed with the soil vanadium non-cancer hazards identified in this operable unit.

8.2 Ecological Risk Assessment

A part of the RI, ecological risk was evaluated to determine the likelihood that adverse ecological effects are occurring or may potentially occur as a result of the site-related contamination.

The risk assessment was performed in accordance with EPA's *Ecological Risk Assessment Guidance for Superfund* eight step approach. As part of that approach, a Screening Level Ecological Risk Assessment (SLERA) was conducted to identify potential environmental risks associated with the site. The SLERA indicated there was a potential for adverse ecological effects. Therefore a more thorough study, called a BERA, was performed.

The BERA evaluated the following potentially complete receptor exposure pathways (and representative receptors):

- Exposure of aquatic invertebrates to contaminated sediment and surface water in Hudson Branch;

- Exposure of mammalian semi-aquatic herbivore (muskrat; *Ondatra zibethicus*) to contaminated sediment, surface water and prey in Hudson Branch;

- Exposure of avian semi-aquatic herbivore (mallard; *Anas platyrhynchos*) to contaminated sediment, surface water, and prey items in Hudson Branch;

- Exposure of avian semi-aquatic insectivore (tree swallow; *Tachycineta bicolor*) to contaminated sediment, surface water, and prey items in Hudson Branch;

- Exposure of mammalian semi-aquatic insectivore (little brown bat; *Myotis lucifugus*) to contaminated sediment, surface water, and prey items in Hudson Branch;

- Exposure of terrestrial plants to contaminated soil, in Eastern Storage Areas, Southern Area, and Hudson Branch Wetlands;

- Exposure of avian terrestrial insectivore (American robin; *Turdus migratorius*) to contaminated soil and prey in the Eastern Storage Areas, and Hudson Branch Wetlands; and

- Exposure of mammalian terrestrial insectivore (short-tailed shrew; *Blarina brevicauda*) to contaminated soil and prey items in the Eastern Storage Areas, and Hudson Branch Wetlands.

Quantitative risk was evaluated by using the HQ approach (exposure estimates are compared to the ecotoxicity benchmark values). HQs greater than one indicate potential risk. Preliminary remediation goals (PRGs) were developed for the areas where ecological risk was identified (see Table 5 of Appendix II).

Potential risks to aquatic invertebrate communities were primarily evaluated by comparing sediment COC concentrations in Hudson Branch to sediment benchmarks; additionally, bulk sediment toxicity testing was performed for survival, growth, and reproduction. Potential risks to terrestrial plants were assessed by comparing surface soil COC concentrations to their respective plant toxicity reference values (TRVs). Potential risks to populations of upper trophic level (wildlife) receptors at the site were evaluated using food chain models (including measured tissue concentrations of aquatic vegetation, aquatic invertebrates, and terrestrial invertebrates) to calculate dietary doses, which were compared to dietary TRVs to yield a quantitative estimate of risk. For wildlife receptors, both no observable adverse effects level (NOAEL) and lowest observed adverse effect level (LOAEL) TRVs were considered.

For the aquatic invertebrate community, potential PRGs are based on the results of the laboratory toxicity testing for the sediment samples collected within the Hudson Branch. Potential PRGs for the semi-aquatic wildlife receptors foraging on plants or aquatic macroinvertebrates residing in the sediments are based on the use of an HQ of 1 for the selected maximum acceptable toxicant concentration (MATC) and LOAEL avian/mammalian TRVs.

The results of the BERA support the following conclusions:

- Several COCs in Hudson Branch sediment have the potential to result in adverse ecological effects to aquatic invertebrates as determined by comparison to freshwater sediment screening levels. Chromium, copper, lead, nickel, and vanadium are expected to be the primary risk drivers. Hudson Branch sediment toxicity testing results also indicated a potential for reduced invertebrate survival, growth, and reproduction.

- Ecological risks were calculated for avian (mallard) and mammalian (muskrat) semi-aquatic herbivores exposed to chromium in sediment from the Hudson Branch. Avian (tree swallow) and mammalian (little brown bat) semi-aquatic insectivores were found to be at risk to chromium and vanadium in sediment from the Hudson Branch.

- In terrestrial areas plants were found to be at risk to chromium, manganese, nickel and vanadium in surface soil. Avian (American robin) and mammalian (short-tailed shrew) insectivores were found to be at risk to chromium and vanadium in surface soil from the Eastern Storage Area. In the Hudson Branch wetlands chromium in surface soil was found to pose a risk to the short-tailed shrew and the American robin. However, the American robin was also potentially at risk to vanadium in surface soil from the Hudson Branch wetlands.

In summary, elevated HQ risks were estimated in the BERA for aquatic invertebrates and upper trophic level receptors for exposure to COCs in the Hudson Branch. These risks are consistent with the reduced survival, growth, and reproduction in the toxicity sediment testing results. These data support the premise that site contaminants in sediment are sufficient to cause adverse alterations to the functioning of aquatic invertebrate communities. Elevated concentrations of the COCs are generally higher in samples closer to the facility. Chromium, copper, lead, nickel, and vanadium are the primary risk drivers in Hudson Branch.

Elevated HQ risks were estimated in this BERA for terrestrial mammals (insectivores), birds (insectivores), and plants. Primary risk drivers are chromium and vanadium. See Table 6 of Appendix II for calculated HQ values.

More specific information concerning public health and environmental risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the HHRA and BERA reports, which can be found in the administrative record for this site. The response action selected in this ROD is necessary to protect public health and the environment from actual or threatened releases of hazardous substances to the environment.

9. REMEDIAL ACTION OBJECTIVES

9.1 Remedial Action Objectives

The Remedial Action Objectives (RAOs) relate to statutory requirements for the development of remedial actions. Site specific RAOs relate to potential exposure routes and specific contaminated media, such as sediments, and are used to identify target areas of remediation and contaminant concentrations. They require an understanding of the contaminants in their respective media and are based upon the evaluation of specific goals to protect human health and the environment. These objectives are based on available information and standards, such as Applicable and Relevant or Appropriate Requirements (ARARs), to-be-considered standards and guidance and site-specific risk-based levels. The following RAOs have been developed to the address the contamination found in the SMC facility soil and the Hudson Branch sediment and surface water at the site:

- Prevent human exposure to contaminated surface soils in the eastern storage area of the SMC facility that pose an unacceptable non-cancer health hazard;
- Prevent exposure to contaminated surface soils in the eastern storage area of the SMC facility that pose an unacceptable ecological risk; and
- Prevent exposure to contaminated sediments in Hudson Branch that pose an unacceptable ecological risk.

Furthermore, protectiveness at the site is dependent upon the ongoing maintenance of capped areas on the SMC facility.

9.2 Remediation Goals

The remediation goals discussed below address total chromium, hexavalent chromium and vanadium contamination in surface soil in the eastern storage area of the facility and total chromium, vanadium, copper, lead and nickel in the Hudson Branch sediment. The remediation goals were developed specifically to protect human health and the environment and thereby address the unacceptable risks identified in the HHRA and the BERA. Based on the results of the BERA and HHRA, remediation goals were developed for surface soil at the eastern storage areas and sediments associated with the Hudson Branch. The overall extent of contamination exceeding remediation goals for Hudson Branch sediment is summarized in Figure 4 of Appendix I.

Facility Soil in Eastern Storage Areas	
Contaminant	**Remediation Goal (mg/kg)**
Total chromium	44
Hexavalent chromium	20
Vanadium	54

Hudson Branch Sediment	
Contaminant	**Remediation Goal (mg/kg)**
Total Chromium	1,275
Vanadium	574
Copper	223
Lead	203
Nickel	107

Although vanadium was detected in surface water samples at concentrations exceeding the SWQS, no unacceptable ecological risk was found. Given that the highest vanadium concentrations in surface water are co-located with the highest concentrations of vanadium in sediment, it is anticipated that addressing the vanadium-contaminated sediment will reduce the levels of vanadium in surface water such that the SWQS is met.

10. DESCRIPTION OF ALTERNATIVES

Section 121 (b)(1) of CERCLA (42 U.S.C. 9621(b)(1))requires that each remedial alternative be protective of human health and the environment, be cost-effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility or volume of hazardous substances.

The guidelines and requirements established in the NCP (40 CFR 300.430) are also considered in the development of alternatives. The EPA has recognized that at certain sites, the use of treatment technologies and the development of a wide range of remedial options may not be practicable.

Principal threat wastes are source materials that include or contain hazardous substances that act as a reservoir for the migration of contamination to groundwater, surface water or air, or act as a source for direct exposure. These materials are considered to be highly toxic or highly mobile and, generally, cannot be reliably contained. At this site, principal threat waste was present in the lagoons and was removed between 1994 and 1997. Therefore, the remedial alternatives developed for the site focused on alternatives that address the low-level threats posed by the contaminated facility soils and Hudson Branch sediments.

The process used to develop and screen appropriate technologies and alternatives to address OU2 contamination in the facility soils and Hudson Branch sediments can be found in the feasibility study report. The initial screening was based on effectiveness, implementability (technical and administrative) and relative cost. The technologies that were carried forward after the initial screening are engineering/institutional controls such as a deed notice; monitoring; capping;

excavation; and treatment. These suitable technologies were assembled into four alternatives representing a range of options for remediation of OU2.

The construction time for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with any potentially responsible parties, or procure contracts for design and construction.

10.1 Common Elements

All of the remedial alternatives except Alternative 1 incorporate and build upon the existing fencing, covers, caps and the previous cleanup of the lagoons to complete the response actions at the site. Institutional controls consisting of deed restrictions will be implemented along with some of the alternatives. Given the expected future use for this site, unrestricted use would not be anticipated. New Jersey's promulgated standard for restricted use will require that, at a minimum, land use would need to be controlled to prevent unrestricted (e.g., residential) use. These institutional controls limit future use of the site soil and are common components of each of the alternatives. If Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) hazardous substances are left on the site, five-year reviews would be conducted to monitor the contaminants and evaluate the need for future actions.

10.2 Detailed Description of Remedial Alternatives

10.2.1 Alternative 1 – No Action

Estimated Capital Cost:	$0
Estimated Annual O&M Cost:	$0
Estimated Present Worth:	$0
Estimated Construction Time:	None

The No Action alternative was retained for comparison purposes as required by the NCP, the regulation under which EPA implements the CERCLA. No remedial actions would be implemented as part of the No Action alternative. This alternative does not include institutional controls.

10.2.2 Alternative 2 – Institutional Controls and Monitoring

Estimated Capital Cost:	$150,000
Estimated Annual O&M Cost:	$490,000
Estimated Present Worth:	$640,000
Estimated Construction Time:	3 months

Alternative 2 includes institutional controls to address all areas that have contaminants posing unacceptable risks from facility soils and/or exceeding the New Jersey RDCSRS (NJAC 7:26D), which are used to determine the need for a deed notice or other land-use restriction. Alternative 2 also incorporates the existing capping of facility soils and fencing around the facility. The risks posed by contaminated sediments at Hudson Branch would be addressed by monitoring of naturally occurring processes that reduce the toxicity, mobility and volume of the contaminants. Under Alternative 2, no further active remediation or treatment of contaminated facility soils in the eastern storage areas or Hudson Branch sediments would be conducted to prevent potential human or ecological exposure.

Institutional Controls, in the form of deed notices, restrictive covenants, and/or local ordinances, would be implemented to prohibit future residential development of facility soils and would ensure that all existing covers and fencing are maintained. For example, should a building be removed, the former building footprint would be paved to maintain existing cover/cap. In addition, if subsurface work is anticipated, the deed notice would require a management plan for workers involved in handling contaminated sediments or facility soils. The deed notice would comply with NJAC 7:26C-7.2. The management plan would require use of appropriate personal protective equipment and proper handling and disposal of contaminated sediments or soils, and would include appropriate inspection and maintenance of engineering controls such as fencing and capping.

Monitoring/Long Term Monitoring – Naturally occurring processes can reduce the toxicity, mobility and volume of the contaminants in sediment. Natural occurring processes may include biodegradation, biotransformation, diffusion, dilution, adsorption, volatilization, chemical reaction or destruction, resuspension, downstream transport and burial by cleaner material. The reduced sediment concentrations over time indicates that some or all of the natural processes mentioned above may be occurring. A detailed monitoring plan would be developed and implemented. Monitoring could include regular inspections with sediment, surface water and plant sampling to confirm that the remedy is achieving the RAOs. Because Alternative 2 would result in contaminants remaining above levels that allow for unrestricted use and unlimited exposure, a review of the remedy's protectiveness would be conducted at least once every five years, as required by CERCLA.

10.2.3 Alternative 3: Capping Facility Soils, Excavating Sediments and Institutional Controls

Estimated Capital Cost:	$4,900,000
Estimated Annual O&M Cost:	$410,000
Estimated Present Worth:	$5,310,000
Estimated Construction Time:	24 months

Alternative 3 includes capping of uncapped facility soils in the eastern storage area to address the unacceptable risks posed by contaminated soils. The existing capping of facility soils and fencing around the facility would be incorporated and ICs would be implemented, as described in Alternative 2. Additional delineation of contamination above remediation goals would be required for the sediments along the Lower Hudson Branch. The contaminated sediments at

Hudson Branch would be excavated to eliminate the unacceptable ecological risk to a depth of 12 inches in the channel and six inches outside the channel.

Soil Capping- A cap would be placed over a 1.3-acre area of the eastern storage area to prevent direct contact with vanadium- and chromium-impacted facility soils. Cap material would be selected during the design after assessing the appropriateness of a permeable or impermeable cap for long-term performance of the remedy. For cost-estimating purposes in the FS, the cap was assumed to a 12- to 24-inch thick gravel cap, or will be a cap consisting of six inches of gravel and two inches of asphalt.

Hudson Branch Sediment Excavation – Approximately 9,800 cubic yards of Hudson Branch sediments that contain metals at concentrations that present a risk to ecological receptors would be excavated, treated (dewatered) and disposed at a permitted off-site disposal location. Excavated areas would be backfilled approximately to pre-existing grades and restored with appropriate fill (the top six inches will be topsoil) and appropriate erosion protective matting, where applicable. Vanadium concentrations in surface water are co-located with the highest concentrations of vanadium in sediment and it is anticipated that addressing the sediment will reduce the surface water concentrations to the NJDEP surface water quality standard of 12 ug/L. Additional sampling will be conducted in the small "pond area" during the pre-design stage to determine if sediment in that localized area is above the remediation goals and should be excavated to protect ecological receptors. The volume of sediment to be excavated, if any, would be small (estimated 400 to 500 of the total 9,800 cubic yards estimated). Remedial design criteria for excavation of sediment in Hudson Branch will incorporate preservation of large trees, to the extent practicable, to promote sustainability and habitat preservation.

Because Alternative 3 would result in contaminants remaining above levels that allow for unrestricted use and unlimited exposure, a review of the remedy's protectiveness would be conducted at least once every five years, as required by CERCLA.

10.2.4 Alternative 4: Excavating Facility Soils, Excavating Sediments and Institutional Controls

Estimated Capital Cost:	$10,670,000
Estimated Annual O&M Cost:	$410,000
Estimated Present Worth:	$11,080,000
Estimated Construction Time:	36 months

The Alternative 4 remedy for sediment is the same as Alternative 3. Alternative 4 includes excavation of facility soils in the eastern storage areas to address the unacceptable risks posed by OU2. The existing capping of facility soils and fencing around the facility would be incorporated and ICs would be implemented, as described in Alternative 2. Additional delineation of contamination above remediation goals would be required for the sediments along the Lower Hudson Branch.

Soils Excavation - Approximately 21,000 cubic yards of facility soils would be excavated, treated as necessary to allow for off-site disposal, and transported to a permitted off-site disposal facility. The depth of excavation would be approximately ten feet. The excavated areas would be backfilled and restored with clean soil and gravel to match the surrounding grade and vegetation.

Hudson Branch Sediment Excavation – The Hudson Branch sediments would be excavated to eliminate unacceptable ecological risk, as described in Alternative 3.

11. COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting a remedy, EPA considered the factors set out in CERCLA §121, 42 U.S.C. §9621, by conducting a detailed analysis of the viable remedial response measures pursuant to the NCP, 40 CFR §300.430(e)(9) and OSWER Directive 9355.3-01. The detailed analysis consisted of an assessment of the individual response measure against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each response measure against the criteria.

Threshold Criteria - *The first two criteria are known as "threshold criteria" because they are the minimum requirements that each response measure must meet in order to be eligible for selection as a remedy.*

11.1 Overall Protection of Human Health and the Environment

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or institutional controls.

Each of the alternatives evaluated for facility soils, except Alternative 1, would provide protection of human health and the environment. No risk reduction is anticipated under the "no action" alternative. Alternative 2 is more protective of human health than Alternative 1 because the deed notice would prohibit the development of the facility for residential use; however, Alternative 2 would not be sufficiently protective because it does not prevent human exposure to contaminated soils or offer protection to ecological receptors from soil or sediment contamination. Alternatives 3 and 4 are protective of human health and the environment. Alternative 3 would eliminate unacceptable risks to human health and ecological receptors through a combination of capping (facility soils), excavation (Hudson Branch sediments) and institutional controls. Alternative 4 would eliminate unacceptable risks by excavating both the facility soils and the Hudson Branch sediments, as well as institutional controls. The excavation of sediment in Alternatives 3 and 4 would cause some disruption of the Hudson Branch habitats, but the disruption would be minimized by incorporating remedial design criteria that preserve large trees, to the extent practicable, and promote sustainability and habitat preservation.

11.2 Compliance with applicable or relevant and appropriate requirements (ARARs)

Section 121 (d) of CERCLA and NCP §300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA section 121(d)(4). Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those State standards identified by a in a timely manner and that are more stringent than Federal requirements may be applicable.

Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those State standards that are identified in a timely manner and are more stringent than Federal requirements may be relevant and appropriate.

Compliance with ARARs addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes or provides a basis for an invoking waiver.

Chemical-specific ARARs for the site include the New Jersey NRDCSRS and the New Jersey SWQS. There are no promulgated standards for sediments. Action-specific ARARs include NJAC 7:26C-7.2 for the establishment of a Deed Notice as an institutional control Location-specific ARARs include federal and state requirements for protection of wetlands, floodplains and streams. Tables 7, 7a and 7b of Appendix II provide a list of the ARARs.

All alternatives except Alternative 1 rely on institutional controls for protectiveness and would comply with the NJAC 7:26C-7.2 ARAR for the placement of a deed notice. Alternatives 1 and 2 do not achieve the chemical-specific ARARs for the facility soil. Alternative 1 also does not achieve the chemical-specific ARAR for Hudson Branch surface water. Alternative 2 would rely on natural processes and long-term monitoring to achieve and demonstrate compliance with the surface water ARAR. Location-specific ARARs do not apply to Alternative 1 and 2 because remedial actions are not implemented. Alternatives 3 and 4 comply with chemical-specific soils ARARs and the location-specific wetlands and floodplains ARARs and would eliminate exposure via capping and excavating, respectively. Alternatives 3 and 4 also comply with the surface water ARAR by removing the contaminated sediment containing the source of the vanadium and then monitoring to demonstrate compliance with the surface water ARAR.

A list of ARARs can be found in Table 7 of Appendix II.

Primary Balancing Criteria *- The next five criteria, criteria 3 through 7, are known as "primary balancing criteria." These criteria are factors with which tradeoffs between response measures are assessed so that the best option will be chosen, given site-specific data and conditions.*

11.3 Long-term effectiveness and permanence

Long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. This criterion includes the consideration of residual risk that will remain on-site following remediation and the adequacy and reliability of controls.

This evaluation takes into account the residual risk remaining at the conclusion of remedial activities, and the adequacy and reliability of containment systems and institutional controls.

Alternative 1 does not offer long-term effectiveness and permanence. Alternative 2 would provide some long-term effectiveness and permanence through the use of institutional controls to help reduce human exposure to facility soils, but would not be effective or permanent with respect to ecological receptors because contaminated soils would remain uncovered and contaminated sediments would remain in the Hudson Branch. Alternatives 3 and 4 offer long-term effectiveness and permanence through institutional controls as well as capping and excavating facility soils and excavating Hudson Branch sediments.

11.4 Reduction of toxicity, mobility, or volume

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Alternatives 1 and 2 would not reduce the toxicity, mobility or volume of contaminants through treatment since no treatment would occur. For Alternatives 3 and 4, a treatment technology may be applied to the excavated sediments to facilitate disposal, such as dewatering, that would reduce the mobility or volume of contaminants.

11.5 Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community and the environment during construction and operation of the remedy until cleanup levels are achieved.

For Alternative 1, protection of the community and workers during remedial activities would not be applicable as no remedial action is occurring. Alternative 2 would not be effective in the short term because it would not address unacceptable ecological risk. On-site workers handling contaminated surface soil could be exposed to facility soil dust during capping (Alternative 3) and excavation (Alternative 4) activities, but the exposure would be addressed by proper use of personal protective equipment and following site-specific health and safety plans. Alternative 3 is more effective in the short term than Alternative 4 because it limits contact with contaminated soil to a greater extent than Alternative 4. Alternatives 3 and 4 are the same for the Hudson Branch sediments and thus have the same short-term effectiveness; there would be an increase in traffic along local roads for approximately 36 months and noise from heavy equipment use.

11.6 Implementability

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

All alternatives are technically feasible. Since no response activities would occur under Alternative 1, it is simplest to implement. The monitoring under Alternative 2 is also readily implementable. The institutional controls under Alternatives 2, 3 and 4 are relatively easy to develop and administratively feasible to implement. Design and implementation of capping (Alternative 3) and excavation (Alternatives 3 and 4) are administratively feasible, as no permits are required for on-site activities, although such activities would comply with substantive requirements of otherwise required permits, and construction would be performed in accordance with the ARARs.

Alternatives 3 and 4 would require truck traffic coordination through the residential neighborhoods and available landfill capacity at an off-site location. Alternatives 3 and 4 can be readily implemented from an engineering standpoint and utilize commercially available products and accessible technology.

11.7 Cost

Includes estimated capital and O&M costs, and net present worth value of capital and O&M cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. A discount rate of seven percent was assumed for O&M cost.

Cost as a balancing criterion is treated slightly differently than the other four balancing criteria for several reasons. Cost estimates provided at this stage of the CERCLA process are accurate to within -30 percent and +50 percent.

Each action alternative includes long-term operation and maintenance. Therefore, a seven percent discount rate was used to derive each alternative's present net worth cost.

Alternative 1 incurs no cost but provides no protection to human health. Except for Alternative 1, Alternative 2 is the least expensive of the alternatives. Alternatives 4 is the most expensive alternative.

Modifying Criteria - The final two evaluation criteria, criteria 8 and 9, are called “modifying criteria” because new information or comments from the state or the community on the Proposed Plan may modify the preferred response measure or cause another response measure to be considered.

11.8 State acceptance

Indicates whether based on its review of the RI/FS reports and the Proposed Plan, the state supports, opposes, and/or has identified any reservations with the selected response measure.

NJDEP concurs with the Selected Remedy.

11.9 Community acceptance

Summarizes the public’s general response to the response measures described in the Proposed Plan and the RI/FS reports. This assessment includes determining which of the response measures the community supports, opposes, and/or has reservations about.

EPA solicited input from the community on the remedial alternative proposed for the site. Verbal comments were recorded from attendees of the public meeting. Several written comments were received.

Representatives of a potentially responsible party provided extensive comments in support of the preferred remedy (Alternative 3). Site neighbors and other community members although generally supportive of EPA’s Alternative 3, expressed a preference for excavation of all material including the slag pile in the restricted area, which is not a component of OU2. The three written comments received expressed a preference for removal and disposal of contaminated soils (Alternative 4), including slag piles.

In Appendix V, the Responsiveness Summary addresses all comments received; it also includes copies of the written comments and a transcript from the public meeting.

12. PRINCIPAL THREAT WASTE

Principal threat wastes are source materials that include or contain hazardous substances that act as a reservoir for the migration of contamination to groundwater, surface water or air, or act as a source for direct exposure. These materials are considered to be highly toxic or highly mobile and, generally, cannot be reliably contained.

At this site, principal threat waste was present in the lagoons and was removed between 1994 and 1997. Therefore, the remedial alternatives developed for the site focused on alternatives that address the low-level threats posed by the contaminated facility soils and Hudson Branch sediments.

13. SELECTED REMEDY

Based upon consideration of the results of the investigations, the requirements of CERCLA, the detailed analysis of the remedial alternatives and public comments, EPA has determined that Alternative 3 is the appropriate remedy for the site. This remedy best satisfies the requirements of CERCLA Section 121 and the NCP's nine evaluation criteria for remedial alternatives, 40 CFR §300.430(e)(9).

The major components of the Selected Remedy include:

- Capping the 1.3 acres of vanadium- and chromium-impacted soils in the eastern storage areas that pose unacceptable risks to human health and ecological receptors.

- Establishing institutional controls in the form of deed restrictions/environmental easements and/or restrictive covenants on future uses of the facility to ensure that residential use is prohibited and to ensure that all existing covers/caps are not disturbed (for example, should a building be removed, the former building footprint must be paved to maintain existing cover/cap).

- Maintaining the existing security measures at the site (e.g., signage and fencing).

- Maintaining the existing covers/caps.

- Excavating approximately 9,800 cubic yards of Hudson Branch sediments to a depth of 12 inches in the channel and a depth of six inches outside the channel to meet remediation goals listed in the Remedial Goals section of this ROD and eliminate ecological risk. Depending on the results of the predesign investigation, an estimated 400 to 500 cubic yards of sediment may need to be excavated in the small "pond area" to meet remediation goals and eliminate ecological risk in that localized area (less than half an acre).

- Backfilling the excavated areas with clean material to match the surrounding grade and restoring, as necessary.

- Monitoring surface water in the Hudson Branch for vanadium until the NJDEP surface water quality standard of 12 ug/L is met.

- Reviewing the protectiveness of the remedy at least once every five years, as required by CERCLA.

- Performing further vanadium and hexavalent chromium delineation during the pre-remedial design phase in areas of the Lower Hudson Branch to identify areas that may require excavation.

The Selected Remedy, Alternative 3, provides the best balance of trade-offs among alternatives with respect to the evaluating criteria. The EPA and NJDEP believe that the Selected Remedy will be protective of human health and the environment, complies with ARARs, is cost effective, and will utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

Green Remediation Considerations

Green remediation practices can be incorporated into the Selected Remedy's planning and implementation of pre-design investigation and remediation as follows:

- Minimize number of field mobilizations.
- Use local labor to reduce fuel consumption associated with driving to the site.
- Use ultra-low sulfur diesel or fuel-grade biodiesel as fuel for construction vehicles.
- Use non-phosphate detergents for decontamination.
- Use direct push technology, if feasible, for soil sampling to minimize waste production (drill cuttings) and the uses of fuel.
- Schedule sampling to minimize shipping.

14. STATUTORY DETERMINATIONS

As was previously noted, CERCLA §121(b)(1) mandates that a remedial action must be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity or mobility of the hazardous substances, pollutants, or contaminants at a site. CERCLA §121(d) further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA §121(d)(4). For the reasons discussed below, EPA has determined that the Selected Remedy meets the requirements of CERCLA Section 121.

14.1 Protection of Human Health and the Environment

The Selected Remedy, Alternative 3, will be protective of human health and the environment through a combination of capping (facility soils), excavation (Hudson Branch sediments) and institutional controls. The planned capping system will prevent direct contact with contaminated soils thereby eliminating the risk to humans posed by incidental ingestion, dermal contact and inhalation of fugitive dust and impacts to ecological receptors.

Sediments with unacceptable levels of contamination in the Hudson Branch will be excavated, treated (dewatered) and disposed at a permitted off-site disposal location thereby further reducing ecologic risk. Post-excavation monitoring will be conducted to ensure compliance with remedial goals for sediment and ARARs for surface water.

Long-term monitoring of the capping remedy and enforcement of institutional controls will ensure that remaining wastes will not impact human health and the environment through direct contact or impact to groundwater.

The Selected Remedy will provide adequate long-term control of risks to human health and the environment through excavation, capping, institutional controls and long-term monitoring. The Selected Remedy presents the fewest short-term risks of all action alternatives.

14.2 Compliance with ARARs

The Selected Remedy (Alternative 3) will comply with all federal and state requirements that are ARARs. A comprehensive ARAR discussion is included in the FS and a listing of ARARs is included in Tables 7, 7a and 7b of Appendix II of this ROD. Alternative 3 would meet the chemical-specific ARARs, including the NRDCSRS for facility soil, and the New Jersey SWQS. There are no chemical-specific ARARs for sediment.

The Selected Remedy will attain all location-specific ARARs, including requirements related to protection of aquatic resources such as the wetlands, floodplains and streams and requirements to mitigate any adverse impacts.

The Selected Remedy will also comply with action-specific ARARs, including the establishment of a deed notice as an institutional control pursuant to NJAC 7:26C-7.2.

14.3 Cost Effectiveness

EPA has determined that the Selected Remedy is cost-effective and represents a reasonable value. In making this determination, the following definition was used: "… remedy shall be cost-effective if its costs are proportional to its overall effectiveness" (40 C.F.R. §300.430(f)(1)(ii)(D)).

EPA evaluated the "overall effectiveness" of those alternatives that satisfied the threshold criteria (*i.e.*, were both protective of human health and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, or volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost-effectiveness.

The Selected Remedy is considered cost-effective because it is a permanent solution that reduces risk to acceptable levels at less expense than the other permanent, risk reducing alternatives evaluated. Detailed cost estimates for the Selected Remedy may be found in Table 8 and 8a of Appendix II.

EPA found that the benefits derived from excavation and the off-site disposal of contaminated soil, Alternative 4, do not justify the significant increased costs over the Selected Remedy and, therefore, EPA determined that the Selected Remedy is cost-effective as it has been determined to provide the greatest overall protectiveness for its present worth costs.

14.4 Utilization of Permanent Solutions and Alternative Treatment Technologies

EPA has determined that the Selected Remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner, given the specific conditions at the site. Of those alternatives that are protective of human health and the environment and comply with ARARs to the extent practicable, EPA has determined that the Selected Remedy provides the best balance of trade-offs in terms of the five balancing criteria, while also considering State and community acceptance. The remedy will require specific institutional controls over the long-term to ensure the protectiveness of the remedy and the integrity of the cap.

14.5 Preference for Treatment as a Principal Element

At this site, principal threat waste was present in the lagoons and was removed between 1994 and 1997. Therefore, the remedial alternatives developed for the site focused on alternatives that address the low-level threats posed by the contaminated facility soils and Hudson Branch sediments.

14.6 Five-Year Review Requirements

The Selected Remedy will result in contamination remaining above levels that allow for unlimited use and unrestricted exposure. Therefore, a statutory review will be conducted within five years of construction completion for the site to ensure that the remedy is, or will be, protective of human health and the environment.

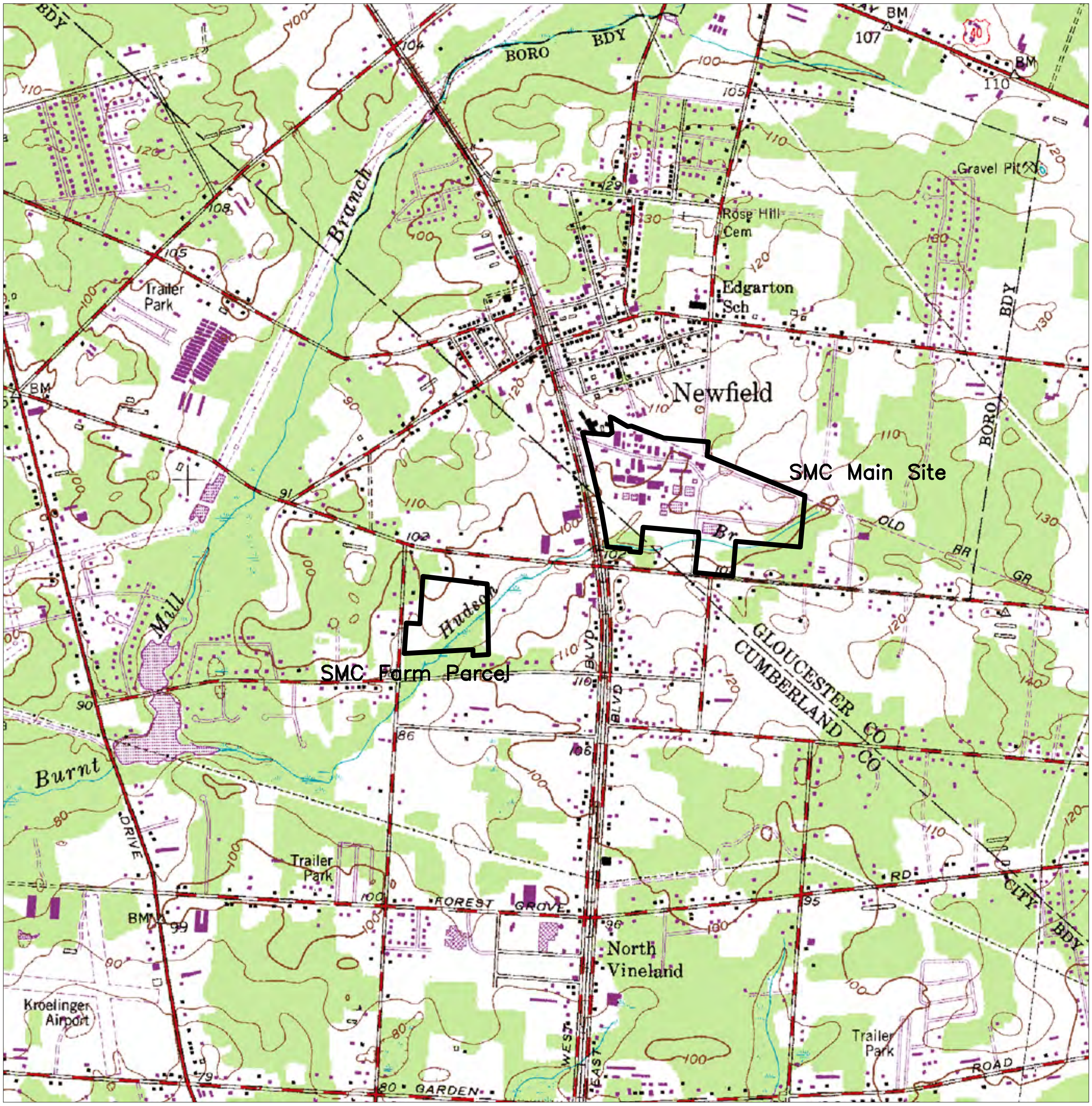
15. DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the site was released for public comment on June 26, 2014. The comment period closed on July 28, 2014.

The Proposed Plan identified Alternative 3 (Capping Facility Soils, Excavating Sediments and Institutional Controls) as EPA's preferred alternative. EPA reviewed all written and verbal comments submitted during the public comment period. Upon review of the comments, it was determined that no significant changes to the remedy, as was originally identified in the Proposed Plan, were necessary.

Appendix I

FIGURES



SOURCE: NEWFIELD, N.J. QUADRANGLE, 1953, PHOTOREVISED 1994, 7.5 MINUTE SERIES (USGS TOPOGRAPHIC MAP)

SITE PROPERTY BOUNDARY

0 2000 FT.

APPROXIMATE SCALE

NEW JERSEY

QUADRANGLE LOCATION

TRC ENVIRONMENTAL CORP.
57 East Willow Street
Millburn, New Jersey 07041

SITE LOCATION MAP

SHIELDALLOY METALLURGICAL CORPORATION
NEWFIELD, NEW JERSEY

JOB NO.: 2710ES–112434

BR/TH	DATE: SEPTEMBER 2013	FIGURE: 1

M:\CAD FILES\WORK\2710ES\2013 OU2 FS\FIGURE 1 SITE LOCATION MAP.DWG 07/19/2013 02:16:37PM TAB: LAYOUT

LEGEND

- NATURAL RESOURCE RESTORATION PLANTING AREAS (NOTE: THESE AREAS WERE CAPPED UNDER REGULATORY LEGAL AGREEMENTS WITH 1–2' OF CLEAN SOIL AND VEGETATION, IN 1999 AND 2001. DATA SHOWN IS BELOW THE CAP.)
- RESTRICTED AREA
- EASTERN STORAGE AREA
- FORMER LAGOON AREA
- FORMER PRODUCTION AREA
- SOUTHERN AREA
- UNCAPPED AREA
- EXISTING BUILDING FOOTPRINT
- DEMOLISHED BUILDING FOOTPRINT
- ITEMS REMOVED/CLOSED
- PROPERTY LINE
- FENCE LINE
- WETLAND LIMITS
- WETLAND BUFFER
- 100 YR FLOODPLAIN*
- DELINEATED STREAM
- VEGETATIVE AREA INCLUDING GRASS, TREES AND DIRT ROADS
- FORMER PRODUCTION AREA WITH CONCRETE, ASPHALT, BUILDING SLAB, AND SOIL COVER.
- FORMER LAGOON WITH SOIL COVER BETWEEN 32" AND 98" (EXCAVATED FROM 32" TO 98". THEN BACKFILLED FROM 32" TO 98" WITH CERTIFIED CLEAN FILL).
- FORMER LAGOON WITH LIMITED EXCAVATION. CLEAN SOIL COVER EXTENDS TO 3' IN EXCAVATED AREAS.

* BASED ON 2010 FIS IN NEWFIELD NEW JERSEY. VINELAND'S LAST FIS WAS IN 1982 AND DID NOT CLASSIFY THE UPPER HUDSON BRANCH AS HAVING ANY 100 YR FLOOD RISK.

SOURCE:

BASE MAP FROM JAMES M. STEWART, INC., LAND SURVEYORS, PHILADELPHIA, PA. AND ON–SITE OBSERVATIONS.

LACROCE PROPERTY BOUNDARY BASED ON TAX MAP–CITY OF VINELAND, OCTOBER 1, 1971.

ORTHOPHOTOS FROM NEW JERSEY IMAGE WAREHOUSE WEB SITE, PUBLISHED 7/31/2003 WITH PHOTO TAKEN IN 2002.

0 120' 240'
GRAPHIC SCALE

TRC ENVIRONMENTAL CORP.
1500 Market Street
Philadelphia, PA 19102

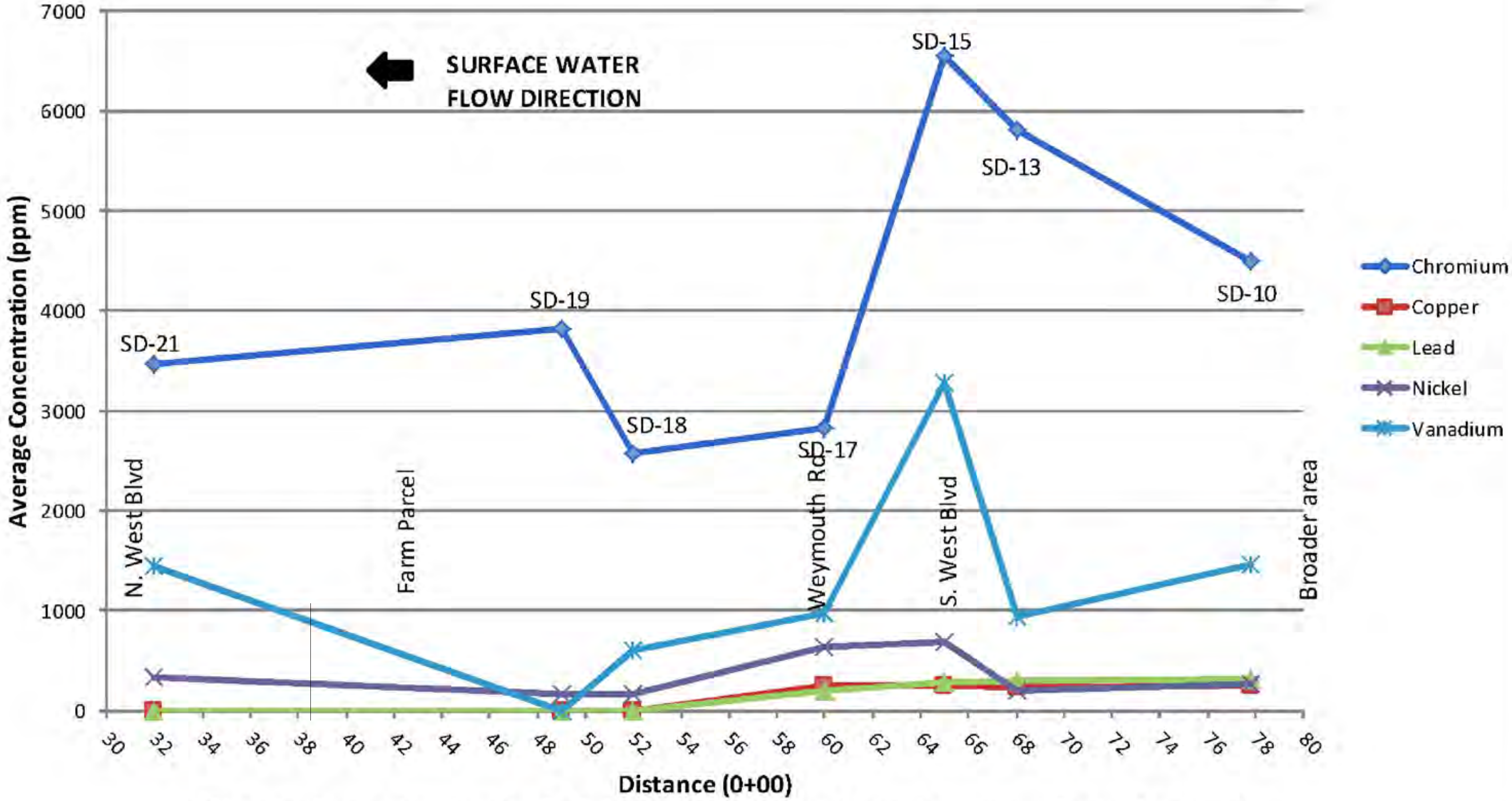
SITE PLAN

SHIELDALLOY METALLURGICAL CORPORATION
NEWFIELD, NEW JERSEY

JOB NUMBER: 112434

JG/PZ	DATE: FEBRUARY 2013	FIGURE: 2

FILE: M:\CAD FILES\WORK\2710ES\2014_04 OU2 REVISED FS\FIGURE 2 – KEY FACILITY AREAS 4.30.14.DWG, DATE: 04/30/2014 04:39:39PM



***Note:** Sediment data from 0 - 0.5 ft bgs. Sediment exceedance data averaged at each transect.

TRC ENVIRONMENTAL CORP.
1500 Market Street
Philadelphia, PA 19102

METALS IN HUDSON BRANCH SEDIMENTS COMPARISON

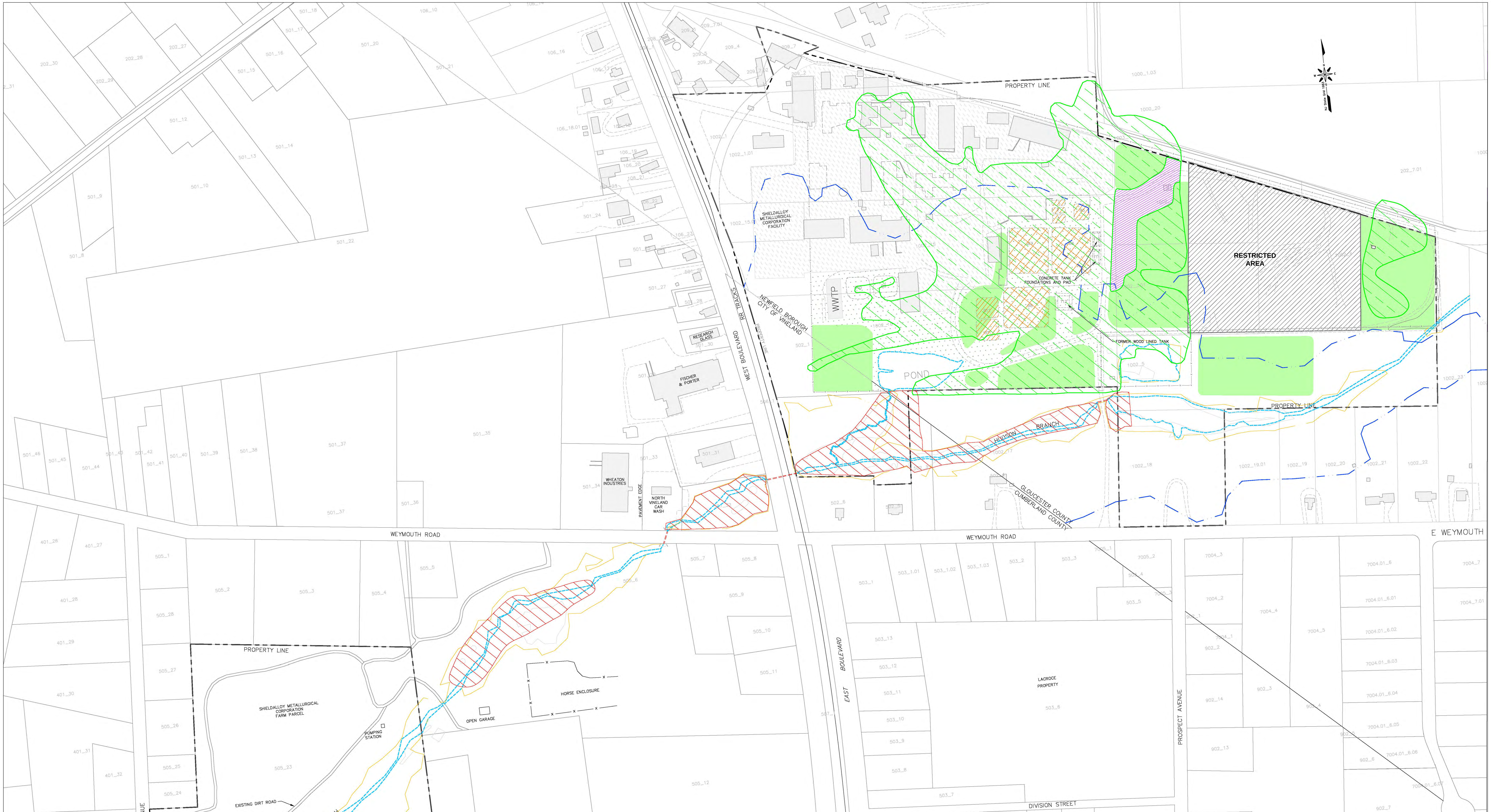
SHIELDALLOY METALLURGICAL CORPORATION
NEWFIELD, NEW JERSEY

JOB NO.: 112434

DD/PZ	DATE: July 2013	FIGURE: 3

Q:\GEOSCI\GISKEYProjects\SMC\FIGURE 1 SITE LOCATION MAP_Feb2013-2010.DWG

R2-0003484



SOURCE:

BASE MAP FROM JAMES M. STEWART, INC., LAND SURVEYORS, PHILADELPHIA, PA. AND ON-SITE OBSERVATIONS.
LACROCE PROPERTY BOUNDARY BASED ON TAX MAP-CITY OF VINELAND, OCTOBER 1, 1971.
ORTHOPHOTOS FROM NEW JERSEY IMAGE WAREHOUSE WEB SITE, PUBLISHED 7/31/2003 WITH PHOTO TAKEN IN 2002.

NOTE:

EXTENTS OF SEDIMENT CONCERNS IN HUDSON BRANCH IS BASED ON SEDIMENT DATA EXCEEDING ECOLOGICAL PRGS, SOIL BANK DATA, WETLAND LIMITS, AND LOCALIZED TOPOGRAPHY. ALSO, THE UNCAPPED AREA IS SITE SOIL EXCEEDING HUMAN HEALTH AND ECOLOGICAL PRGS FOR VANADIUM, THAT ARE NOT ALREADY CAPPED.

LEGEND

- PROPERTY LINE
- FENCE LINE
- APPROXIMATE PHRAGMITES
- DELINEATED STREAM
- WETLAND LIMITS
- 100 YR FLOODPLAIN*
- RESTRICTED AREA
- VEGETATIVE AREA INCLUDING GRASS, TREES AND DIRT ROADS
- FORMER PRODUCTION AREA WITH EXISTING CONCRETE, ASPHALT, BUILDING SLAB, AND SOIL COVER.
- FORMER LAGOON WITH SOIL COVER BETWEEN 32" AND 98" (EXCAVATED FROM 32" TO 98". THEN BACKFILLED FROM 32" TO 98" WITH CERTIFIED CLEAN FILL).
- FORMER LAGOON WITH LIMITED EXCAVATION. CLEAN SOIL COVER EXTENDS TO 3' IN EXCAVATED AREAS.
- UNCAPPED AREA OF EASTERN STORAGE AREA EXCEEDING PRGs
- EXTENTS OF FACILITY SOILS EXCEEDING PRGs OR ARARs
- EXISTING NATURAL RESOURCE RESTORATION PLANTING AREA
- EXISTING BUILDING FOOTPRINT
- DEMOLISHED BUILDING FOOTPRINT
- ITEMS REMOVED/CLOSED
- EXTENTS OF HUDSON BRANCH SEDIMENT EXCEEDING PRGs

* BASED ON 2010 FIS IN NEWFIELD NEW JERSEY. VINELAND'S LAST FIS WAS IN 1982 AND DID NOT CLASSIFY THE UPPER HUDSON BRANCH AS HAVING ANY 100 YR FLOOD RISK.

0 120' 240'
GRAPHIC SCALE

TRC ENVIRONMENTAL CORP.
1500 Market Street
Philadelphia, PA 19102

AREAS REQUIRING REMEDIAL ATTENTION

SHIELDALLOY METALLURGICAL CORPORATION
NEWFIELD, NEW JERSEY

JOB NUMBER: 112434

JG/PZ	DATE: JULY 2013	FIGURE: 4

FILE: M:\CAD FILES\WORK\271SES\2014_04 OU2 REVISED FS\FIGURE 3- SITE AREAS REQUIRING REMEDIAL ATTENTION.DWG, DATE: 09/02/2014 09:09:21AM

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Appendix II

TABLES

Table 1
Summary of Chemicals of Concern and
Medium-Specific Exposure Point Concentrations

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: On-Site Surface Soil

Exposure Point	Chemical of Concern	Concentration Detected		Concentration Units	Frequency of Detection	Exposure Point Concentration	Exposure Point Concentration Units	Statistical Measure
		Min	Max					
On-Site Surface Soil	Vanadium	5.4	12,100	mg/kg	147/149	1,329	mg/kg	97.5 % KM (Chebyshev) UCL

Table 1
Summary of Chemicals of Concern and
Medium-Specific Exposure Point Concentrations

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: On-Site Combined Surface and Subsurface Soil

Exposure Point	Chemical of Concern	Concentration		Concentration Units	Frequency of Detection	Exposure Point Concentration	Exposure Point Concentration	Statistical Measure
		Min	Max					
On-Site Combined Surface/Subsurface Soil	Vanadium	2.4	12,100	mg/kg	223/228	895	mg/kg	97.5% KM (Chebyshev) UCL

Table 2
Selection of Exposure Pathways

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Groundwater	Groundwater	Water at Tap	On-Site Worker	Adult	Ingestion	None	Excluded, groundwater is a separate OU and not subject to current AOC
			Water at Tap	On-Site Worker	Adult	Dermal while showering	None	
Current	Groundwater	Groundwater	Water at Tap	Off-Site Resident	Adult	Ingestion	None	Excluded, groundwater is a separate OU and not subject to current AOC
			Water at Tap	Off-Site Resident	Adult	Dermal while showering	None	
Current	Groundwater	Groundwater	Water at Tap	Off-Site Resident	Child	Ingestion	None	Excluded, groundwater is a separate OU and not subject to current AOC
			Water at Tap	Off-Site Resident	Child	Dermal while showering	None	
Future	Groundwater	Groundwater	Water at Tap	On-Site Resident	Adult	Ingestion	None	Excluded, groundwater is a separate OU and not subject to current AOC
			Water at Tap	On-Site Resident	Adult	Dermal while showering	None	
Future	Groundwater	Groundwater	Water at Tap	On-Site Resident	Child	Ingestion	None	Excluded, groundwater is a separate OU and not subject to current AOC
			Water at Tap	On-Site Resident	Child	Dermal while showering	None	
Current/Future	Soil	Surface Soil	Surface Soil	On-Site Worker	Adult	Ingestion	Quant.	Selected
			Surface Soil	On-Site Worker	Adult	Dermal	Quant.	Selected
			Fugitive Dusts	On-Site Worker	Adult	Inhalation	Quant.	Selected
Current/Future	Soil	Surface Soil	Surface Soil	Trespasser	Adolescent	Ingestion	Quant.	Selected, although due to location, unlikely scenario
			Surface Soil	Trespasser	Adolescent	Dermal	Quant.	Selected, although due to location, unlikely scenario
			Fugitive Dusts	Trespasser	Adolescent	Inhalation	Quant.	Selected, although due to location, unlikely scenario
Future	Soil	Surface Soil	Surface Soil	On-Site Resident	Adult	Ingestion	Quant.	Selected, although due to storage of nuclear material, highly unlikely
			Surface Soil	On-Site Resident	Adult	Dermal	Quant.	Selected, although due to storage of nuclear material, highly unlikely
			Fugitive Dusts	On-Site Resident	Adult	Inhalation	Quant.	Selected, although due to storage of nuclear material, highly unlikely
Future	Soil	Surface Soil	Surface Soil	On-Site Resident	Young Child	Ingestion	Quant.	Selected, although due to storage of nuclear material, highly unlikely
			Surface Soil	On-Site Resident	Young Child	Dermal	Quant.	Selected, although due to storage of nuclear material, highly unlikely
			Fugitive Dusts	On-Site Resident	Young Child	Inhalation	Quant.	Selected, although due to storage of nuclear material, highly unlikely
Current/Future	Soil	Surface/Subsurface Soil	Surface/Subsurface Soil	Construction Worker	Adult	Ingestion	Quant.	Selected
			Surface/Subsurface Soil	Construction Worker	Adult	Dermal	Quant.	Selected
			Fugitive Dusts	Construction Worker	Adult	Inhalation	Quant.	Selected
Current/Future	Soil	Surface/Subsurface Soil	Surface/Subsurface Soil	Utility Worker	Adult	Ingestion	Quant.	Selected
			Surface/Subsurface Soil	Utility Worker	Adult	Dermal	Quant.	Selected
			Fugitive Dusts	Utility Worker	Adult	Inhalation	Quant.	Selected
Current/Future	Surface Water	Surface Water	Surface Water	Trespasser	Adolescent	Incidental Ingestion	Quant.	Selected
			Surface Water	Trespasser	Adolescent	Dermal	Quant.	Selected
Current/Future	Sediment	Sediment	Sediment	Trespasser	Adolescent	Incidental Ingestion	Quant.	Selected
			Sediment	Trespasser	Adolescent	Dermal	Quant.	Selected

Table 3
Non-Cancer Toxicity Data Summary

Pathway: Ingestion/Dermal

Chemicals of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Absorp. Efficiency (Dermal)	Adjusted RfD (Dermal)	Adj. Dermal RfD Units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD Target Organ	Dates of RfD
Vanadium	Chronic	9.0E-03	mg/kg-d	3%	2.3E-04	mg/kg-d	Decreased hair cystine	-	USEPA 2012b RSL Table	12/12

Pathway: Inhalation

Chemicals of Concern	Chronic/ Subchronic	Inhalation RfC	Inhalation RfC Units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfC Target Organ	Dates of RfC
Vanadium	Chronic	7.00E-06	mg/m3			PPRTV	12/12

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Table 4
Risk Characterization Summary - Non-Carcinogens

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	On-Site Surface Soil	On-Site Surface Soil	Vanadium	Decreased hair cystine	1.9E+00	2.5E-01	NA	2.1E+00
			Exposure Medium Total					2.1E+00

Table 4
Risk Characterization Summary - Non-Carcinogens

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure
Soil	On-Site Surface/Subsurface Soil	On-Site Surface/Subsurface Soil	Vanadium	Decreased hair cystine	3.2E-01	1.6E+00	NA	2.0E+00
			Exposure Medium Total					2.0E+00

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Table 5

Risk-Based Sediment Preliminary Remediation Goals

Sediment COCs	Mean Sediment Concentration **(mg/kg)**[1]	Benthic Community Proposed PRG **(mg/kg)**[2]	**Wildlife Potential PRGs (mg/kg)**[3]							
			Muskrat		Mallard		Little Brown bat		Tree Swallow	
			LOAEL	MATC	LOAEL	MATC	LOAEL	MATC	LOAEL	MATC
Chromium	1923	**1275**	6190	1250	1400	578	5930	1200	616	254
Copper	76.8	**223**	NA	NA	NA	NA	NA	NA	NA	NA
Lead	83.6	**303**	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	136	**107**	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	486	**574**	NA	NA	NA	NA	102.0	80.3	7.10	5.86

Notes:

Values in bold represent proposed preliminary remediation goals (PRGs).

1 Mean sediment concentrations from aquatic habitat area.

2 Based on toxicity test results from the Hudson Branch sediment samples.

3 Sediment concentration resulting in HQ of 1 for MATC or LOAEL TRV

Table 5a

Risk- Based Surface Soil Preliminary Remediation Goals

Surface Soil COPEC	**Mean Surface Soil/Overbank Sediment Concentration (mg/kg)[1]**	Wildlife Potential PRGs (**mg/kg**)[2]			
		Short-Tailed Shrew		American Robin	
		LOAEL	MATC	LOAEL	MARTC
Eastern Storage Areas					
Chromium	162	366	74	108	**44.4**
Vanadium	1017	322	255	63	**52.5**
Hudson Branch Wetland					
Chromium	669	1290	261	380	**157**
Vanadium	507	NA	NA	39	**32**

Notes:
Values in bold represent proposed preliminary remediation goals (PRGs).
1 Mean surface soil concentrations from terrestrial habitat area.
2 Surface soil concentration resulting in HQ of 1 for MATC and LOAEL TRVs

Table 6
Semi-Aquatic Wildlife Receptors Mean UCL and Mean Risk Characterization - Hudson Branch
SMC Superfund Site
Newfield, New Jersey

Sediment COPEC	Avian MATC TRV (mg/kg-BW/day) [1]	Mammalian MATC TRV (mg/kg-BW/day) [2]	Mean UCL Muskrat Dose (mg/kg/BW-day)	Mean UCL Mallard Dose (mg/kg/BW-day)	Mean UCL Little Brown Bat Dose (mg/kg/BW-day)	Mean UCL Tree Swallow Dose (mg/kg/BW-day)	Mean UCL Muskrat MATC HQ[3]	Mean UCL Mallard MATC HQ[3]	Mean UCL Little Brown Bat MATC HQ[3]	Mean UCL Tree Swallow MATC HQ[3]
Antimony	NA	0.40	NRP	NRP	0.00E+00	NRP	-	-	0E+00	-
Barium	29.5	-	NRP	NRP	NRP	1.89E+01	-	-	-	6E-01
Chromium	6.46	11.8	3.40E+01	4.03E+01	3.54E+01	9.17E+01	3E+00	6E+00	3E+00	1.4E+01
Copper	25.4	-	NRP	NRP	NRP	2.85E+01	-	-	-	1E+00
Mercury	0.087	-	NRP	NRP	NRP	1.66E-01	-	-	-	2E+00
Vanadium	1.42	9.44	NRP	NRP	9.85E+01	2.55E+02	-	-	1.0.E+01	1.8E+02
						Total Hazard Index	3E+00	6E+00	1.3.E+01	1.97.E+02

Sediment COPEC	Avian MATC TRV (mg/kg-BW/day) [1]	Mammalian MATC TRV (mg/kg-BW/day) [2]	Mean Muskrat Dose (mg/kg/BW-day)	Mean Mallard Dose (mg/kg/BW-day)	Mean Little Brown Bat Dose (mg/kg/BW-day)	Mean Tree Swallow Dose (mg/kg/BW-day)	Mean Muskrat MATC HQ[3]	Mean Mallard MATC HQ[3]	Mean Little Brown Bat MATC HQ[3]	Mean Tree Swallow MATC HQ[3]
Antimony	NA	0.40	NRP	NRP	0.00E+00	NRP	-	-	0E+00	-
Barium	29.5	-	NRP	NRP	NRP	1.45E+01	-	-	-	5E-01
Chromium	6.46	9.18	1.81E+01	2.15E+01	1.89E+01	4.89E+01	2E+00	3E+00	2E+00	8E+00
Copper	25.40	-	NRP	NRP	NRP	1.33E+01	-	-	-	5E-01
Mercury	0.087	-	NRP	NRP	NRP	9.28E-02	-	-	-	1E+00
Vanadium	1.42	6.04	NRP	NRP	4.52E+01	1.17E+02	-	-	7E+00	8.2E+01
						Total Hazard Index	2E+00	3E+00	1E+01	9.2E+01

Notes:

1 Avian MATC TRVs from Table 4-13 (applies to mallard and tree swallow).

2 Mammalian MATC TRVs from Table 4-13 (applies to muskrat and little brown bat).

3 HQ (Hazard Quotient) = Mean or Mean UCL exposure dose / TRV.

NA - Not available

NRP - No risk predicted (not at risk based on results of SLERA).

Table 6a
Terrestrial Wildlife Receptors Mean UCL and Mean Risk Characterization - Eastern Storage Areas and Hudson Branch Wetland
SMC Superfund Site
Newfield, New Jersey

Surface Soil COPEC	Avian MATC TRV (mg/kg-BW/day)	Mammalian MATC TRV (mg/kg-BW/day)	Eastern Storage Areas		Hudson Branch Wetlands		Eastern Storage Areas		Hudson Branch Wetlands	
			Mean UCL Shrew Dose (mg/kg/BW-day)	Mean UCL Robin Dose (mg/kg/BW-day)	Mean UCL Shrew Dose (mg/kg/BW-day)	Mean UCL Robin Dose (mg/kg/BW-day)	Mean UCL Shrew MATC HQ	Mean UCL Robin MATC HQ	Mean UCL Shrew MATC HQ	Mean UCL Robin MATC HQ
Chromium	6.46	11.8	3.82E+01	3.50E+01	8.65E+01	7.92E+01	3E+00	5E+00	7E+00	1.2E+01
Vanadium	1.42	7.48	6.23E+01	5.70E+01	NRP	7.17E+01	8E+00	4.0E+01	-	5.0E+01
						Total Hazard Index	1.2E+01	4.6E+01	7E+00	6.3.E+01

Surface Soil COPEC	Avian MATC TRV (mg/kg-BW/day)	Mammalian MATC TRV (mg/kg-BW/day)	Mean UCL Shrew Dose (mg/kg/BW-day)	Mean UCL Robin Dose (mg/kg/BW-day)	Mean UCL Shrew Dose (mg/kg/BW-day)	Mean UCL Robin Dose (mg/kg/BW-day)	Mean Shrew MATC HQ	Mean Robin MATC HQ	Mean Shrew MATC HQ	Mean Robin MATC HQ
Chromium	6.46	11.8	2.57E+01	2.35E+01	3.02E+01	2.76E+01	2E+00	4E+00	3E+00	4E+00
Vanadium	1.42	7.48	2.98E+01	2.73E+01	NRP	2.23E+01	4E+00	1.9E+01	-	1.6E+01
						Total Hazard Index	6E+00	2.3E+01	3E+00	2.0E+01

Table 7

Chemical-Specific ARARs, TBCs, and Other Guidelines

TYPE OF ARAR or TBC	REGULATORY/ REQUIREMENT	REGULATION/ CITATION	APPLICABILITY/ RELEVANCE	SITE-SPECIFIC ARAR/TBC
Federal	Safe Drinking Water Act	40 CFR 141	Drinking water standards which apply to specific contaminants that have been determined to have an adverse impact on human health; [for surface water cleanup as needed]	ARAR for Surface water, if needed
	Toxic Substances Control Act (TSCA)	40 CFR Part 6 Appendix A	Statement of Procedures on Floodplain Management and Wetlands Protection	ARAR for Floodplain management and wetland protection
	Identification and Listing of, specific Hazardous Waste	40 CFR Part 261.3, 261.6, 261.10	Defines those wastes, which are subject to regulation as hazardous wastes, and lists specific chemical and industry-source wastes.	
	EPA Regional SLs for Residential Soil	EPA Regional Screening Levels (RSL)	risk-based concentrations derived from standardized equations combining exposure information assumptions with EPA toxicity data. They are used for site "screening" and as initial cleanup goals	TBCs for wetland soils and background soil samples.
	2009 EPA National Recommended Water Quality Criteria	Section 304(a) of the Clean Water Act (CWA)	Provide guidance for states and tribes to use in adopting water quality standards.	TBC for surface water
	2006 EPA Region III Biological Technical Assistance Group Freshwater Screening Benchmarks			TBC for sediment
State				
	Surface Water Quality Standards	NJAC 7:9B	NJDEP sets standards for surface water based on classes	ARAR for various contaminants
	Remediation Standards	NJAC 7:26D	Sets minimum surface water and soil remediation standards, and requires development of impact to ground water soil remediation standards	ARARs for surface water cleanup objectives.

Table 7-Continued

Chemical-Specific ARARs, TBCs, and Other Guidelines

TYPE OF ARAR or TBC	REGULATORY/ REQUIREMENT	REGULATION/ CITATION	APPLICABILITY/ RELEVANCE	SITE-SPECIFIC ARAR/TBC
	NJDEP Chromium Policy	Memorandum February 8, 2007	Soil screening levels for chromium and hexavalent chromium	TBCs for soil
State	Impact to ground water soil screening levels	Guidance Document for Development Of Impact To Ground Water Soil Remediation Standards Using The Soil-Water Partition Equation, Version 2.0, November 2013	Impact to ground water soil screening levels.	TBCs for soil
	NJDEP Ecological Screening Criteria	Ecological Screening Criteria March 10, 2009	Ecological screening criteria in surface water, sediment and soils	TBC for surface water, sediments and soil

Table 7a
Action-Specific ARARs TBCs, and Other Guidelines

TYPE OF ARAR or TBC	REGULATORY/ REQUIREMENT	REGULATION CITATION	APPLICABILITY/ RELEVANCE	SITE-SPECIFIC ARAR/TBC
Federal	Resource Conservation and Recovery Act (RCRA)	40 CFR 262, 263, 264, 265.	Hazardous waste handling, storage, disposal.	ARAR for off-site disposal of hazardous wastes; for on-site treatment and storage activities.
	Clean Air Act	40 CFR 50	Particulate and fugitive dust emission requirements.	ARAR for on-site activities with potential to generate particulate and/or fugitive dust emissions.
	Solid Waste Disposal Act, as amended – Regulated Levels for TCLP Constituents	42 U.S.C. §§ 6901-6992k; 40 C.F.R. Part 261	Specifies TCLP constituent levels for identifying wastes that exhibit toxicity characteristics	ARAR identify of hazardous wastes
State	Technical Requirements for Site Remediation	N.J.A.C. 7:26E	Technical requirements for remediation of contaminated sites	ARARs for investigation/ delineation of site impacts, development of remedial action plans, implementation of remedial action plans, etc..
	Administrative Requirements for the Remediation of Contaminated Sites (ARRCS)	N.J.A.C .7:26C	Administrative requirements for remediation of contaminated sites.	ARARs for institutional controls such as deed notices,
	Soil Erosion and Sediment Control	NJSA 4:24	Requirements for controlling erosion during land disturbances over 5000 sf.	ARAR for applicable activities (e.g., excavation).

Table 7b
Location-Specific ARARs, TBCs, and Other Guidelines

TYPE OF ARAR or TBC	REGULATORY/ REQUIREMENT	REGULATION/ CITATION	APPLICABILITY/ RELEVANCE	SITE-SPECIFIC ARAR/TBC
Federal	Wetlands Protection	40 CFR Part6, Appendix A, Executive Order 11990	Requires consideration of impacts to wetlands in order to minimize any destruction, loss, or degradation and to preserve their values.	ARAR for impacts/remedial action in wetlands areas and buffer zones.
	Clean Water Act, Section 404(b)(1) Guidelines [regards to wetlands]	40 CFR 230.10	Guidelines established criteria for evaluating impacts to waters of the US (including wetlands) and sets forth factors for considering mitigation measures	ARAR for impacts/remedial action in wetlands areas and buffer zones and streams.
	Floodplain Protection	40 CFR Part6, Appendix A, Executive Order 11988	Requires consideration of impacts to floodplain areas in order to minimize any flood impacts on human health, safety and welfare, reduce flood loss risks, and to preserve/restore their values.	ARAR for impacts/remedial action in floodplain areas
	Code of Federal Regulations- Location Standards [regards to floodplains]	40 CFR 264.18	Regulates the design, construction, operation, and maintenance of hazardous waste management facilities within the 100-year floodplain.	ARAR for impacts/remedial action in floodplain areas.
State	Wetlands Protection Regulations	NJAC 7:7A	Regulates the disturbance or alteration of freshwater wetlands and their respective buffer.	ARAR for impacts/remedial action in wetlands areas and buffer zones.
	Freshwater Wetlands Protection Act	N.J.S.A. 13:9B-1 et seq.	Related to Freshwater wetlands permit, procedures, and exemption to engage or work in wetland areas.	ARAR for impacts/remedial action in wetlands areas and buffer zones.
	Floodplain/Flood Hazard Area Protection	NJAC 7:13	Regulates the disturbance, the placement of fill, grading, excavation, or other disturbance within the defined flood hazard area/ floodplain of rivers/streams.	ARAR for impacts/remedial action in floodplain areas.

Table 8
Conceptual Cost Estimate
OU2 Remedial Alternative #3: Capping of Soils, Excavating of Sediments
Shieldalloy Metallurgical Superfund Site; Newfield, NJ

Remedial Alternative Description:
Cap uncapped ares of Facility soils, excavate/restore Hudson Branch sediments, maintain existing facility cover, facility deed notice.

CAPITAL COST

Item	Estimated Quantity	Units	Unit Price	Total Cost (rounded)
FACILITY SOILS				
Silt Fencing	2,000	LF	$ 5	$ 10,000
Cap (gravel)	4,000	CY	$ 22	$ 88,000
Geotextile (demarcation)	1.3	acres	$ 7,600	$ 10,000
Deed notice	1	LS	$ 50,000	$ 50,000
HUDSON BRANCH				
Temporary Items				
Temporary Fencing	10,000	LF	$ 11	$ 110,000
Mobilization/Demobilization	4	per event	$ 50,000	$ 200,000
Silt Fencing	10,000	LF	$ 5	$ 50,000
Water Pumping/Treatment/Facilities	5	month	$ 50,000	$ 250,000
Temporary Construction Roads/Access	7,000	ft	$ 31	$ 217,000
Excavation				
Clearing and Grubbing	4.9	acre	$ 7,000	$ 30,000
Excavation	9,800	cy	$ 30	$ 294,000
Handling/drying	9,800	cy	$ 5	$ 49,000
Stabilization (assumed % to render it non-haz)	980	cy	$ 60	$ 60,000
10%				
Offsite Transportation and Disposal	13,700	ton	$ 80	$ 1,096,000
Backfill/Restoration				
Top Soil	9,800	cy	$ 45	$ 441,000
Seeding	4.9	acre	$ 5,000	$ 25,000
Erosion Mats	4.9	acres	$ 17,000	$ 83,000

Subtotal Direct Construction Costs		$ 3,063,000
Contingency	20%	$ 612,600
Project Management	10%	$ 306,300
Remedial Design	10%	$ 306,300
Engineering and Construction Management	10%	$ 306,300
Legal and Administrative	5%	$ 153,150
EPA Oversight Fees	5%	$ 153,150
TOTAL CONSTRUCTION COSTS (rounded)		**$ 4,901,000**

Table 8

Conceptual Cost Estimate

OU2 Remedial Alternative #3: Capping of Soils, Excavating of Sediments

Shieldalloy Metallurgical Superfund Site; Newfield, NJ

Remedial Alternative Description:

Cap uncapped ares of Facility soils, excavate/restore Hudson Branch sediments, maintain existing facility cover, facility deed notice.

O&M Costs

Item	Frequency	Quantity		Units	Rate/Cost Per Event	Total Cost (rounded)
Inspection/repair--all facility fencing*	30	66	LF	LS	$ 23	$ 46,000
Inspection/repair--all facility caps/covers*	30	0.7	acre	LS	$ 15,000	$ 315,000
Hudson Branch repair	1 Years	5		LS	$ 20,000	$ 100,000
5-year review	5	5		LS	$ 10,000	$ 50,000

*Performed by site owner

Sub-Total OM&M (30 Years):		$ 511,000
Contingency	20%	$ 102,000
Project Management	10%	$ 51,000
Remedial Design	10%	$ 51,000
Construction Management	10%	$ 51,000
Legal and Administrative	5%	$ 26,000
EPA Oversight Fees	5%	$ 26,000

TOTAL OM&M COSTS: $ 818,000

TOTAL PROJECT COSTS (UNADJUSTED For NPV): $ 5,719,000

NPV ANALYSIS

Sub-Total OM&M (30 Years from next table):		$ 253,700
O&M COST MARKUPS		
Contingency	20%	$ 50,740
Project Management	10%	$ 25,370
Remedial Design	10%	$ 25,370
Construction Management	10%	$ 25,370
Legal and Administrative	5%	$ 12,685
EPA Oversight Fees	5%	$ 12,685
TOTAL OM&M COSTS (rounded):		$ 406,000

TOTAL PRESENT VALUE PROJECT COSTS: $ 5,307,000

Table 8a
Conceptual Cost Estimate
OU2 Remedial Alternative #3: Capping of Soil, Excavating Sediment NPV
Shieldalloy Metallurgical Superfund Site; Newfield, NJ

YEAR	CAPITAL COST	OM&M COSTS (W/CONTINGENCY)						Total Annual Cost (Rounded, Not Adjusted for Inflation)	PRESENT VALUE (AT 7% DISCOUNT RATE)
		Annual OM&M			Periodic OM&M				
		Fencing repairs	Cap Repairs			Hudson Branch Repairs	5-year review		
0	**$ 4,901,000**			$ -		$ -			**$ 4,901,000**
1		$ 1,518	$ 10,500			$ 20,000		$ 32,100	$30,000
2		$ 1,518	$ 10,500			$ 20,000		$ 32,100	$28,037
3		$ 1,518	$ 10,500			$ 20,000		$ 32,100	$26,203
4		$ 1,518	$ 10,500			$ 20,000		$ 32,100	$24,489
5		$ 1,518	$ 10,500			$ 20,000	$ 10,000	$ 42,100	$30,017
6		$ 1,518	$ 10,500					$ 12,100	$8,063
7		$ 1,518	$ 10,500					$ 12,100	$7,535
8		$ 1,518	$ 10,500					$ 12,100	$7,042
9		$ 1,518	$ 10,500					$ 12,100	$6,582
10		$ 1,518	$ 10,500				$ 10,000	$ 22,100	$11,235
11		$ 1,518	$ 10,500					$ 12,100	$5,749
12		$ 1,518	$ 10,500					$ 12,100	$5,373
13		$ 1,518	$ 10,500					$ 12,100	$5,021
14		$ 1,518	$ 10,500					$ 12,100	$4,693
15		$ 1,518	$ 10,500			$ -	$ 10,000	$ 22,100	$8,010
16		$ 1,518	$ 10,500					$ 12,100	$4,099
17		$ 1,518	$ 10,500					$ 12,100	$3,831
18		$ 1,518	$ 10,500					$ 12,100	$3,580
19		$ 1,518	$ 10,500					$ 12,100	$3,346
20		$ 1,518	$ 10,500			$ -	$ 10,000	$ 22,100	$5,711
21		$ 1,518	$ 10,500					$ 12,100	$2,922
22		$ 1,518	$ 10,500					$ 12,100	$2,731
23		$ 1,518	$ 10,500					$ 12,100	$2,552
24		$ 1,518	$ 10,500					$ 12,100	$2,385
25		$ 1,518	$ 10,500			$ -	$ 10,000	$ 22,100	$4,072
26		$ 1,518	$ 10,500					$ 12,100	$2,084
27		$ 1,518	$ 10,500					$ 12,100	$1,947
28		$ 1,518	$ 10,500					$ 12,100	$1,820
29		$ 1,518	$ 10,500					$ 12,100	$1,701
30		$ 1,518	$ 10,500			$ -	$ 10,000	$ 22,100	$2,903
	7%	Discount Factor					Total Unadjusted Costs:	$ 523,000	
							Total Discounted OM&M Costs (rounded):		**$253,700**

Appendix III

ADMINISTRATIVE RECORD INDEX

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

07/03/2013 **Region ID: 02**

Site Name: SHIELDALLOY CORP.
CERCLIS: NJD002365930
OUID: 02
SSID: 02B7
Action:

DocID:	Date:	Title:	Image Count:	CD:	Doc Type:	Author Name:	Author Organization:	Addressee Name:	Addressee Organization:
210458	7/3/2013	ADMINISTRATIVE RECORD INDEX FOR OU2 FOR THE SHIELDALLOY CORPORATION SITE	2		[INDEX]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]	[]	[]
210457	5/1/2011	HEALTH AND SAFETY AND EMERGENCY ACTION PLAN FOR OU1 AND OU2 FOR THE SHIELDALLOY CORPORATION SITE	171		[PLAN]	[,]	[TRC ENGINEERS INCORPORATED]	[]	[]
210450	5/20/2011	DRAFT SUPPLEMENTAL REMEDIAL INVESTIGATION WORKPLAN FOR OU2 FOR THE SHIELDALLOY CORPORATION SITE	101		[PLAN]	[,]	[TRC ENGINEERS INCORPORATED]	[]	[]
210455	9/1/2011	QUALITY ASSURANCE PROJECT PLAN FOR THE SUPPLEMENTAL REMEDIAL INVESTIGATION (INCLUDING BASELINE ECOLOGICAL RISK ASSESSMENT) FOR OU2 FOR THE SHIELDALLOY CORPORATION SITE	1076		[PLAN]	[,]	[TRC COMPANIES, INC.]	[]	[]
210449	9/9/2011	TRC SOLUTIONS RESPONSE TO US EPA COMMENTS AND ADDENDUM TO THE SHIELDALLOY METALLURGICAL CORPORATION FACILITY OU2 SUPPLEMENTAL REMEDIAL INVESTIGATION WORKPLAN FOR THE SHIELDALLOY CORPORATION SITE	34		[OUTLINE]	[,]	[TRC]	[]	[]
210459	9/9/2011	TRANSMITTAL OF TRC SOLUTIONS RESPONSE TO US EPA COMMENTS AND ADDENDUM TO THE SHIELDALLOY METALLURGICAL CORPORATION FACILITY OU2 SUPPLEMENTAL REMEDIAL INVESTIGATION WORKPLAN FOR THE SHIELDALLOY CORPORATION SITE	1		[LETTER]	[HANSEN, PATRICK J]	[TRC COMPANIES, INC.]	[HENRY, SHERREL D]	[EPA, REGION 2]

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

07/03/2013 **Region ID: 02**

Site Name: SHIELDALLOY CORP.
CERCLIS: NJD002365930
OUID: 02
SSID: 02B7
Action:

DocID:	Date:	Title:	Image Count:	CD:	Doc Type:	Author Name:	Author Organization:	Addressee Name:	Addressee Organization:
210451	9/30/2011	US EPA APPROVAL OF THE QUALITY ASSURANCE PROJECT PLAN (QAPP) FOR OU2 AND THE SUPPLEMENTAL REMEDIAL INVESTIGATION WORK PLAN AND ADDENDUM FOR OU2 FOR THE SHIELDALLOY CORPORATION SITE	1		[LETTER]	[HENRY, SHERREL D]	[EPA, REGION 2]	[HANSEN, PATRICK J]	[TRC COMPANIES, INC.]
210452	2/1/2013	DRAFT FINAL BASELINE ECOLOGICAL RISK ASSESSMENT FOR OU2 - VOLUME IV: APPENDIX B OF THE REMEDIAL INVESTIGATION REPORT FOR OU2 FOR THE SHIELDALLOY CORPORATION SITE	328		[REPORT]	[,]	[TRC ENGINEERS INCORPORATED]	[]	[]
210453	2/1/2013	FINAL SITE CHARACTERIZATION SUMMARY REPORT TEXT AND FIGURES FOR OU2 - VOLUMES II AND III: APPENDIX A OF THE REMEDIAL INVESTIGATION REPORT FOR OU2 FOR THE SHIELDALLOY CORPORATION SITE	435		[REPORT]	[,]	[TRC ENGINEERS INCORPORATED]	[]	[]
210456	2/1/2013	REVISED DRAFT BASELINE HUMAN HEALTH RISK ASSESSMENT FOR OU2 - VOLUME V: APPENDIX C OF THE DRAFT REMEDIAL INVESTIGATION REPORT FOR OU2 FOR THE SHIELDALLOY CORPORATION SITE	579		[REPORT]	[,]	[TRC ENGINEERS INCORPORATED]	[]	[]

R2-0003504

Appendix IV

STATE CONCURRENCE LETTER

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CHRIS CHRISTIE
Governor
KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

Site Remediation Program
Mail Code 401-406
P.O. Box 420
Trenton, NJ 08625-0420
Phone #: 609-292-1250

SEP 2 3 2014

Walter Mugdan, Director
Emergency and Remedial Response Division
U.S. Environmental Protection Agency Region II
290 Broadway
New York, NY 10007-1866

Re: Shieldalloy Metallurgical Corporation
35 South West Blvd
Newfield, Gloucester County

Dear Mr. Mugdan:

The New Jersey Department of Environmental Protection (Department) has completed review of the Record of Decision (ROD) for Operable Unit 2 (OU2) for the Shieldalloy Metallurgical Corporation Superfund Site. The ROD was prepared by the U.S. Environmental Protection Agency (EPA) and addresses non-perchlorate contaminated soil, sediments and surface water. The Department concurs with the selected remedy, which includes:

- Capping 1.3 acres of vanadium- and chromium-impacted on-site soils
- Excavating non-perchlorate contaminated Hudson Branch sediments
- Monitoring surface water to ensure surface water quality standards are met
- Backfilling excavated areas with clean material and restoring
- Establishing institutional controls (i.e. deed notice)
- Maintaining existing engineering controls
- Delineating vanadium and chromium in the Lower Hudson Branch to identify areas that may require excavation
- Reviewing site conditions every five years

The selected remedy was chosen in accordance with the comprehensive Environmental Response, Compensation, and Liability Act, as amended, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision is based on the Administrative Record file for this site. The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial actions, is cost effective, and uses permanent solutions and treatment technologies to the maximum extent practicable.

The Department appreciates the opportunity to participate in the decision making process to select an appropriate remedy. If you have any questions, please call me at 609-292-1250.

Sincerely,

Mark J. Pedersen
Assistant Commissioner
Site Remediation Program

c: Donna L. Gaffigan, Case Manager

Appendix V

RESPONSIVENESS SUMMARY

SHIELDALLOY METALLURGICAL CORPORATION SUPERFUND SITE OU2 ROD

APPENDIX V

RESPONSIVENESS SUMMARY

INTRODUCTION

This Responsiveness Summary provides a summary of comments and concerns received during the public comment period related to the Shieldalloy Metallurgical Corporation Superfund site Proposed Plan and provides the U.S. Environmental Protection Agency's (EPA's) responses to those comments and concerns. All comments summarized in this document have been considered in EPA's final decision in the selection of the remedy to address the contamination at the Site.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

EPA's Proposed Plan for the OU2 soil, sediment and surface water remediation was released to the public on June 27, 2014. A copy of the Proposed Plan, RI sampling results, FS for soil, sediment and surface water remediation alternatives and other documents which comprise the administrative record file were made available to the public in the information repository located at the Newfield Public Library as well as the EPA Region 2's Record Center. A public notice was published in *Vineland's Daily Journal* on June 27, 2014, advising the public of the availability of the Proposed Plan. This notice also announced the opening of a 30-day public comment period, from June 27, 2014 to July 28, 2014, and invited the interested parties to attend an upcoming public meeting. At this public meeting, held on July 9, 2014, at the Edgarton Christian Academy[1] at 212 Catawba Avenue, Newfield, New Jersey, EPA presented the preferred alternative for the OU2 contaminated soil, sediment and surface water remedy, answered questions regarding the Shieldalloy Metallurgical Corporation site, and accepted verbal comments regarding the Proposed Plan.

SUMMARY OF COMMENTS AND RESPONSES

Comments were received at the public meeting and in writing (letters and e-mail). The public generally support the remedy selected for the Hudson Branch sediment (excavation and off-site disposal), but most did not agree with the portion of the remedy selected for facility soils (capping and institutional controls). Written and oral comments included strongly contrary

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[1] Please note that both the Proposed Plan and the public notice advertised that the public meeting would be held at the Newfield Borough Hall located at 18 Catawba Avenue, Newfield, New Jersey. However, because of a scheduling conflict that arose with the Town Board, the meeting place was changed. Proper notification was given in the form of posting the new venue on the EPA's web page, sending a press release to the local newspapers and posting signs with the new venue at the Newfield Borough Hall.

positions, with several parties such as TRC strongly advocating for the on-site capping of vanadium- and chromium-impacted soils, and other parties, for example, Gloucester County Board of Chosen Freeholders and the Green Action Alliance, opposing on-site capping, and preferring excavation and off-site transportation and disposal. Both approaches were considered in the FS and the Proposed Plan. EPA's rationale for selecting capping is included in the Decision Summary. Please see also EPA’s response to Comment 17, below.

The transcript from the public meeting can be found in Appendix V-a.

The written comments (letters and e-mail) submitted during the comment period can be found in Appendix V-b. A summary of the comments provided at the public meeting and in writing, as well as the EPA’s responses to them, are provided below.

Note: Several statements at the meeting raised the issue of the radioactive slag materials that are present at the Shieldalloy property. These materials are regulated by Nuclear Regulatory Commission/New Jersey Department of Environmental Protection and are not part of the EPA Superfund process. As such, the radioactive slag materials are beyond the scope of the OU2 public comment period and this responsiveness summary.

<u>Scope and Role of Operable Units</u>

Comment 1. A commenter stated that “before anything is done,” there should be a groundwater study of this site by the U.S. Geological Survey, and noted that a million dollar treatment system is in place for the two [public water supply] wells in town. Another commenter asked for a description of the pilot studies that are currently underway concerning the remediation of groundwater contamination at the site.

EPA Response. The groundwater at the site is being addressed separately as OU1. The extraction and treatment system that is operating to clean up the groundwater plume of contamination is currently being evaluated and this evaluation, which includes pilot studies on other remedial options, may lead to changes are to improve its effectiveness. The pilot studies that are part of OU1 will be discussed in an OU1 Proposed Plan, which is expected to be released for public comment in fall of 2015. Be that as it may, the groundwater plume is not currently affecting the public supply wells and they are not threatened by the site.

Comment 2. A commenter asked for a discussion of the analytical results from sampling of two outfalls and information on the flow associated with them, along with a map of the facility’s storm systems.

EPA Response. Sampling of the two permitted outfalls are performed as part of the OU1 groundwater study. Facility storm water and treated water from the on-site groundwater treatment system was discharged to the on-site impoundment located near the southwest corner of the Facility, during treatment plant operations. The treated water was tested during treatment plant operations, and the surface water collected in the impoundments never came in contact with contaminated material. One of the outfalls is located at the northwest corner of the on-site impoundment and is the pump and treatment system's discharge point into the impoundment. The other outfall conducts water from the impoundment into the ditch that flows towards Hudson Branch. The ditch is located at the southwest corner of the on-site impoundment. Monthly surface water sampling associated with the treatment plant operations indicates that no surface water exceedances were measured leaving the on-site impoundment. This information, as well as a map of the facility's storm system, will be included in the OU1 Record of Decision Amendment, which is expected to be finalized in fall of 2015.

Comment 3. A commenter asked for a description of the stream gauging program on Hudson Branch and a discussion on the interaction between the aquifer and the stream.

EPA Response. The stream gauging program pertains to the groundwater studies being evaluated for OU1. Hudson Branch is typically a losing stream, with surface water of the stream recharging the aquifer (rather than groundwater discharging into the stream). As part of the groundwater cleanup, we need to fully understand how the groundwater moves, including whether it comes in contact with the stream.

NPL Listing

Comment 4. A commenter asked what the site ranking was on the NPL. Another commenter stated that the fact that the Shieldalloy site is on the Superfund List in itself indicates "a risk factor to the Newfield residents and others beyond."

EPA Response. The site was listed on the NPL with a ranking value of 58.75. Sites with a value of 28.5 or above qualify for inclusion on the NPL. Following NPL listing, the EPA uses its human health risk assessment (HHRA) process and data from a comprehensive remedial investigation, rather than the limited information available at the time of the NPL listing, to quantify risks to receptors at or near a Superfund site.

Remedial Investigation

Comment 5. A commenter asked for a chart of surface water, soils, and sediments sampling results and a map of all sampling locations. Another commenter asked that EPA collect samples of stormwater runoff from the slag pile to evaluate potential impacts to soils, wetlands, sediments, and Hudson Branch.

EPA Response. Surface water, soils, and sediments sampling results were summarized in the Proposed Plan and are included in the Decision Summary of the ROD under the Results of the Remedial Investigation section. Further, samples locations and results are presented in Figures 11-28 in the remedial investigation (RI) report, entitled *Draft Final OU2 Remedial Investigation Report, Volume I-RIR text and figures*, dated July 2013. The OU2 RI report is available in the administrative record file and site repositories. Radiological contamination located in the restricted area on the SMC facility is not part of the Superfund site and is being addressed by

NJDEP, as authorized by the U.S. Nuclear Regulatory Commission (NRC). Further information about the environmental response actions to address the restricted area is available from NJDEP.

Comment 6. A commenter asked if soil was sampled in the vicinity of Burnt Mill Pond. Another commenter asked about whether contaminant concentrations in the soil samples have increased.

EPA Response. Transported sediment tends to settle as it flows from a stream to a pond, because the velocity of the water slows in the pond and the sediments drop out of the water column. In studying the stream channel, depositional zones were identified and sampled, and there were infrequent detections of site contaminants and only at low concentrations, supporting the conclusion that the stream is not a significant transport mechanism for site contaminants. Because the stream is not a significant transport mechanism, the sediment or soil outside of the channel of Burnt Mill Pond was not sampled.

Burnt Mill Pond sediment was sampled, at locations along the channel at the bottom of Burnt Mill Pond. These sample locations were chosen because a fate and transport analysis indicated that, if site material were being transported, it would be transported primarily along the channel and would be expected to have the highest concentration of contaminants. Samples collected from the channel locations did not present a risk; therefore, other locations would not be expected to present a risk.

Comment 7. A commenter asked that the Human Health Risk Assessment include an evaluation of human health risks to the Borough residents and other receptors.

EPA Response. EPA conducts a HHRA to evaluate site related risks to current and potential future receptors. Borough residents were evaluated as current/future recreational trespassers, current/future on-site workers, current/future utility/construction workers and future on-site residents. These were the most likely exposure pathways and were expected to yield the greatest risk. The results of the risk assessment are used to determine if the site poses an unacceptable risk, indicating the need for remediation.

Comment 8. A commenter asked about the risk to someone using the Pond for recreation (Burnt Mill Pond, which is located in a public park), compared to the risk to the recreational trespasser evaluated in the Human Health Risk Assessment.

EPA Response. In the Human Health Risk Assessment, the exposure frequency for the recreational trespasser was a total of 52 days per year, based on two days per week in the 13 weeks of summer and one day per week in the 26 weeks of spring and fall. EPA believes that an exposure frequency of 52 days per year appropriately reflects the maximum exposure to the Burnt Mill Pond material that is reasonably anticipated to occur at the site regardless of whether the access was gained by trespassing or not. In addition, EPA performed a back-calculation to determine the greatest exposure frequency that yields an acceptable risk, which is an exposure frequency of 260 days per year. This greater exposure frequency can be expressed as exposure to the material for 70 percent of the year, or six days per week during the 13 weeks of summer and five days per week during the 26 weeks of spring and fall. With an exposure frequency of 260 days, the excess lifetime cancer risk is 4 $x10^{-04}$ and the noncancer health hazard is 6 x 10^{-02}, which are still within acceptable risk levels established by CERCLA. Details regarding the calculations of the new exposure scenario are documented in the *Human Health Risk Assessment Addendum* dated August 12, 2014, which has been added to the administrative record file.

Comment 9. A commenter asked whether trucks leaving the site should be decontaminated.

EPA Response. Access to contaminated areas is currently restricted, so that vehicles entering and leaving the site today are not coming in contact with contaminated material and do not need to be washed down. As part of health-and-safety procedures during a cleanup, trucks that travel into "exclusion zones," (where the contamination is located) need to be decontaminated upon leaving that restricted area.

Comment 10. EPA should review the stormwater systems for new developments which are to be constructed along Catawba Avenue.

EPA Response. Stormwater systems for new developments to be constructed along Catawba Avenue are unlikely to have any impact on remediation of facility soils and sediment in Hudson Branch and, therefore, it is not be necessary for EPA to review these stormwater systems prior to issuance of this OU2 ROD. Surface water drainage issues are important for the implementation of the remedy, and the remedial design will need to include information about current surface water drainage features prior to starting the cleanup.

<u>Feasibility Study & Proposed Plan</u>

Comment 11. A commenter expressed support for Alternative 3, stating that it is consistent with Superfund law and the National Oil and Hazardous Substances Contingency Plan (NCP), including the nine evaluation criteria as well as EPA policy and precedent. Several other commenters expressed opposition to Alternative 3 (for example, "I'm opposed to Alternative 3 because [capping doesn't] do any good because those metals and chemicals are still so extremely high;" and Alternative 3 "represents placing a Band-Aid on a dirty/infected cut"). Another commenter asked whether contamination continues under the cap.

EPA Response. Alternative 3 calls for capping of 1.3 acres of soil in the eastern storage area, excavating 9,800 cubic yards sediments in Hudson Branch, institutional controls and five-year reviews to ensure that the remedy remains protective of human health and the environment. Alternative 3 meets the expectations established by the NCP § 300.430(a)(iii)(B), which states that EPA expects to use engineering controls, such as containment, for waste that poses a relatively low long-term threat or where treatment is impracticable. Alternative 3 is protective of human health and the environment, provides long-term effectiveness, will achieve the ARARs in a reasonable time frame, and is cost-effective.

Further, the proposed capping of 1.3 acres of soil in the eastern storage areas is appropriate for the type and degree of soil contamination (vanadium and chromium), is consistent with prior capping that has been completed in other areas of the facility, and fits the current and reasonably anticipated land use (commercial/industrial). Capping of the eastern storage area soil is not designed to reduce the concentration levels of contaminants in the soil. The purpose of the cap is to reduce the risk from exposure by preventing direct contact with the soils. Capping is a readily implementable technology that has been used successfully throughout the country and world.

Comment 12. A commenter asked if the Borough would receive a yearly fee for capping.

EPA Response. Alternative 3 does not call for annual payments to the Borough.

Comment 13. Several commenters addressed the future land use of the site, stating that the site should be cleaned up to the highest standard, which is for residential land use. A commenter asked how much land would be capped and available for commercial or industrial use under Alternative 3.

EPA Response. The reasonable anticipated future land use at the site is commercial/industrial. Alternative 3 calls for capping of approximately 1.3 acres in the eastern storage areas; this area and other capped areas at the site would be available for commercial or industrial uses.

Comment 14. A commenter asked about the cost of monitoring every five years, and how we would know what happens between year two and year four under the cap.

EPA Response. The monitoring is estimated to cost $32,100 each year ($170,500 over five years, plus an additional $10,000 for the five-year review reporting). The monitoring results will be reviewed as the data become available and will be presented periodically (e.g., annual or semi-annual reports). In addition, CERCLA and the NCP require a Five Year Review to evaluate the selected remedy at least once every five years to determine whether it continues to be protective of human health and the environment.

Comment 15. A commenter opposed all alternatives because they incorporate the use of institutional controls ("I don't like any of them, even Alternative 4 that they have institutional controls, where they have deed restrictions for residential and commercial use.").

EPA Response. Institutional controls (ICs) are a viable option that help to minimize the potential for exposure to contamination and serve to protect the integrity of the cap. In addition, ICs will ensure that all existing covers/caps are not disturbed (for example, should a building be removed, the former building footprint must be paved to maintain existing cover/cap).

Comment 16. A commenter requested that all contaminated materials (soils, sediments, slag, dust, building materials) from the site be removed and transported to an NJDEP-approved, off-site disposal facility. Another commenter asked for the rationale for the EPA's preference of Alternative 3 over Alternative 4. A commenter stated that the current or future risk reduction offered by Alternative 4 was worth the additional $6 million to $12 million above the cost of Alternative 3.

EPA Response. EPA considered the nine evaluation criteria of the Superfund program in proposing Alternative 3. The only difference between Alternatives 3 and 4 is with respect to soil in the eastern storage area. Alternative 3 calls for capping the soil (1.3 acres), whereas Alternative 4 calls for excavating the soil (21,000 cubic yards). Alternative 3 will provide a comparable overall level of protection to Alternative 4 and ranks higher than Alternative 4 with respect to the following evaluation criteria: short-term effectiveness, implementability. In addition, Alternative 4 is 52 percent more costly, without providing commensurate risk reduction.

Comment 17. A commenter stated that Alternative 3 is preferred because it is "greener" than Alternative 4.

EPA Response. The statement is accurate. Although not one of the nine evaluation criteria, EPA also has a green remediation policy, established in 2009, which expresses a preference for incorporating green technologies into cleanup decisions. Alternative 4 does not fully support Green Remediation Principles because it uses more energy and produces more emissions (though only in the short term) than Alternative 3.

Comment 18. A commenter asked about the cleanup standards for sediments in Burnt Mill Pond, a public park, and suggested that the sediment would have to be cleaned up to a residential standard. Another commenter stated that there is no ARAR (applicable or relevant and appropriate standard) for sediment.

EPA Response. NJDEP does not have cleanup standards for sediment (NJAC 7:26D). For sediment in recreational areas, NJDEP recognizes that it is appropriate to develop site-specific criteria that fit the actual exposures that might occur there (including a site used for recreational purposes). Appendix D of the NJDEP remediation standards says: "An alternative remediation standard may be based on use of the site for recreational purposes." The EPA risk-based approach is consistent with NJDEP procedures. Remediation goals were developed for the sediments and are presented in remediation goal section of the ROD.

Comment 19. A commenter requested that EPA clarify NJDEP's position on the Preferred Alternative. The report states that NJDEP is evaluating the preferred alternative and then states that NJDEP believes that the alternative will be protective of human health and the environment.

EPA Response. NJDEP's letter of concurrence with the EPA's selected remedy is included in Appendix IV of the OU2 ROD.

Comment 20. A commenter asked about the permits that will be needed for the project (i.e. NJDEP, Gloucester County Soil Conservation District).

EPA Response. The acquisition of permits is not required for Superfund on-site remedial actions. However, as required by Superfund, all substantive provisions of permitting regulations that are applicable or relevant and appropriate requirements (ARARs) will need to be met.

Remedial Design

Comment 21. A commenter asked for a discussion on the quality assurance-quality control requirements (QA-QC) Plan for the project and a discussion of the monitoring program for the wetlands along the Hudson Branch.

EPA Response. A monitoring program will be developed for OU2 during the remedial design phase and will be documented in the operation and maintenance (O&M) plan. The O&M plan will include requirements for wetland and Hudson Branch monitoring, including the QA-QC requirements.

Enforcement

Comment 22. A commenter asked who is responsible for conducting the monitoring programs. Another commenter asked how long negotiations would take. A commenter asked about the Shieldalloy Company's commitment to funding the cleanup at the facility and whether they have the financial resources available to remediate the site. Another commenter asked about the availability of Superfund funds for the project.

EPA Response. EPA selects a remedy under the Superfund law in a Record of Decision. The Superfund law allows the EPA to clean up hazardous waste sites and to compel responsible parties to perform cleanups or reimburse the government for EPA-lead cleanups. Until the Record of Decision is issued, there typically are no settlement discussions with PRPs with respect to their liability to conduct the remediation or to reimburse EPA for its costs of response. EPA will seek to have the PRPs conduct the remedy or, in the alternative, will seek to have the PRPs reimburse EPA for the costs of response. If needed, funds would be available for remediation of the site. The EPA generally estimates one year for negotiations to perform the remedial design and remedial action. The responsibility for conducting the monitoring program is dependent on whether the EPA is or the PRPs are performing the work at the site.

Community Relations

Comment 23. The Gloucester County Board of Chosen Freeholders formally request to be kept informed of current and future EPA and NJDEP activities and studies at the site for OU1, OU2, OU3 and the slag pile.

EPA Response. The Gloucester County Board of Chosen Freeholders has been added to the site mailing list to receive information about future activities at the site.

RESPONSIVENESS SUMMARY

APPENDIX V-a

JULY 9, 2014 PUBLIC MEETING TRANSCRIPT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

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SHIELDALLOY METALLURGICAL CORP. SUPERFUND SITE

PUBLIC MEETING

- -x

Edgarton Christian Academy
212 Catawba Avenue
Newfield, New Jersey

July 9, 2014
7:00 p.m.

A P P E A R A N C E S:

WANDA AYALA,
EPA Community Involvement Coordinator

DONNA GAFFIGAN,
DEP Case Manager

SHERREL HENRY,
EPA Remedial Project Manager

MICHAEL SIVAK,
EPA Section Chief/Risk Assessor

MS. AYALA: Good evening, everyone. I'd like to welcome you to our meeting tonight. My name is Wanda Ayala, and I'm the Community Coordinator for the Shieldalloy Superfund Site.

Like I told most of you at the entrance, I just want to clarify again, that at this meeting we're not going to be talking about the slag pile. This is about Operable Unit 2 at the site.

The slag pile is under the jurisdiction of the New Jersey DEP and the NRC, and at this time we can't comment on the issue because they're going through some litigation process.

The way that we're going to have the meeting is EPA is going to give a presentation, and then we're going to open up the floor for questions and comments.

Anybody that has a question or comment was assigned a number. If you don't have a number and you decide that you want to do that, you can pick up a number in the back at any time.

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We always also have comment cards. If you don't feel comfortable coming up and talking up front, you can fill out the comment card and give it to me, and

I'll give it back to the team.

We have a stenographer here. It is required by our Superfund law to have a transcript of this meeting. Her name is Linda Marino.

I'm going to ask that you put your phones on vibrate so we can be considerate of the people that are speaking.

I'd like to acknowledge Daniel Stapelkamp from Senator Menendez's office. He's here tonight.

And the Fire Marshal asked me to announce that we have two emergency exits; one is here to my left, and the one is the door that you came in through. And it's a nonsmoking building.

So, I'm going to pass the mic over to Sherrel Henry --

MR. SIVAK: I'll take over.

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MS. AYALA: Okay.

-- who is our Project Manager, and Michael Sivak, who's the Section Chief of the Mega Branch Office for EPA Region 2.

MR. SIVAK: Thank you.

As Wanda said, welcome to our

meeting this evening, where we will be discussing Operable Unit 2 of the Shieldalloy Metallurgical Corporation Superfund Site.

Sherrel will talk a little bit more about what Operable Unit 2 is. But just to keep us on track, Operable Unit 2 is chemical contamination in soils, surface water, and sediment -- so, onsite soils, surface water, and sediment -- chemical contamination that does not include perchlorates. We'll discuss that a little more later.

I'd like to take us through some of our meeting participants this evening.

You've already been introduced to Sherrel Henry. She is the EPA's Project

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Manager for the site.

Wanda Ayala, you met her. She's our Community Involvement Coordinator.

I am Michael Sivak. I am the Section Chief of the Megaprojects Section of the Superfund program in New York and New Jersey. And I'm also here this evening subbing for our human health and ecological risk assessor. I'm a toxicologist by training, so I can kind of talk us through a little bit about the process that was used to assess human health and ecological risks at this site.

And we also have with us this evening Donna Gaffigan. She is the New Jersey DEP Case Manager. She has been handling the chemical contamination at the site from the New Jersey DEP perspective.

So, our purpose this evening is outlined up here, as you can see. We're here to discuss the cleanup options that EPA considered when looking at the contamination at the OU2 for the SMC

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site.

So, we've gone through the process and we've identified what contamination exists at the site, we've identified what technologies, what engineering controls, may be appropriate to address that contamination and reduce the risk at the site, and we've identified what we believe is the most appropriate cleanup action for the site itself.

We're going to talk to you about what that is. It's in the proposed plan, but we're going to walk you through that information this evening.

We will be accepting public comments until Monday, July 28. The proposed plan talks about ways that you can communicate those comments or get those comments to us: You can send them via e-mail; any comments that you make tonight will become part of the transcript, and we will respond to them; and we also have comment cards that Wanda talked about as well.

If you have a comment and you feel

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more comfortable writing it, you can write it down, give it to us, and that becomes part of our formal record as well.

And we will respond to all public comments we receive -- either comments that are submitted this evening, comments that come to Sherrel via e-mail or that are sent in to us -- as part of our Responsiveness Summary in our Record of Decision that will be memorialized in our final decision document. All of those comments and our responses will become part of the record.

So, our agenda this evening, we're going to quickly walk you through the overall Superfund process so you can understand all the different steps that we've gone through to get where we are this evening and all the steps that await us once we get through this evening's meeting.

We'll give you a little bit about the site history; we'll talk to you about the remedial investigation

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sampling, which defined the nature and the extent of the contamination that we've identified at the site; we'll walk you through the assessment of risk first to human health, as well as the ecological assessment; we'll discuss the remedial alternatives that we considered; tell you why we believe that our preferred alternative is the most appropriate one for the site; and then we will open it up to comments and questions from you guys.

So, starting with a little bit of the Superfund process overview, Superfund is also known as CERCLA, which is the Comprehensive Environmental Response Compensation and Liability Act. It was passed by Congress in 1980 in response to a couple of environmental disasters; Love Canal was one of them, Valley of the Drums I think in Tennessee was another one. It was amended in 1986.

The passage of this law provided federal funding to clean up some of

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these hazardous waste sites, it allows EPA to respond to these type of emergencies, and it allows EPA to require potentially responsible parties to pay for or conduct the necessary actions to identify the extent of the problem and to remediate that problem.

So, the Superfund remedial process. It begins with site discovery; someone lets EPA know that there's a problem at a site, and we go out and start to investigate it.

We do what's called a preliminary assessment and a site inspection. We collect some information to determine: Do we think that there is a problem? Do we think that there's a potential threat to human health or the environment that warrants a Superfund-type of response?

We take that information and we run it through what we call a hazard ranking system, which calculates a numeric score based on the type of contamination and the concentration of contamination that we find. And if the score is high enough, it's placed on the National Priorities List, or the NPL. And Shieldalloy Metallurgical Corporation is one of those sites.

Once a site is on the NPL, we then conduct a remedial investigation, which, again, as I said, the goal of which is to identify the nature and the extent of the contamination at the site, look at the fish and transport of the contamination, and assess the potential for human health and ecological risks from exposure to that contamination.

We also conduct a Feasibility Study, which looks at different remedial alternatives against different engineering technologies, different institutional controls that may be appropriate to control or mitigate the risks at the site.

We propose a remedy, and that's where we are this evening. We're here to discuss our proposed remedy.

At the end of our public comment period, we will issue what's called a

Record of Decision. That memorializes EPA's decision on what the remedy for the site is, including responses to all the comments we receive tonight.

We then move into the remedial design or remedial action phase, where we plan the specifics of how we're going to implement that remedy and we conduct that remedy.

Ones that is all conducted, once the site is cleaned up and all of the remedial action objectives for the site have been met, the site is then eligible for deletion.

Once the site is deleted, that doesn't mean we forget about it. One of the things that can happen even after a site is deleted is that we'd be able to come back and evaluate the remedy to make sure that it remains protective of human health and the environment. This is a site where our preferred remedy does require that to happen.

And now Sherrel is going to give you a little bit of history of the site.

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MS. HENRY: Good evening, ladies and gentlemen. My name is Sherrel -- like they said before, my name is Sherrel Henry and I'm the Project

Manager for the Shieldalloy site.

The Shieldalloy site has been around for a long time and there's a wealth of interaction, there's a long history of EPA, DEP, and NRC interaction. There's tons of data that has been collected at the site.

The site started in the early 1900s. Glass manufacturing was conducted at the site. And then in early 1950, SMC purchased -- that's Shieldalloy Metallurgical Corporation -- purchased the site.

From 1955 to 2006, they utilized the facility to process ores and minerals to produce primary metals and specialty metals and ferroalloys.

Raw materials that were utilized in the processes contained various metals, including chromium, copper, titanium, iron, lead, and nickel.

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Now I'll give you a little background. Michael talked about how was the site discovered. And for this particular site, in 1970, chromium contamination was detected in a public supply well and, also, a private well by DEP. So, once that happened, DEC directed SMC to conduct an investigation to find out, you know, where is this contamination coming from.

So, they did an investigation at the site, and the result of that investigation is a pump-and-treat system was put it in. As a result of that, the site was placed on the National Priorities List.

Let me back up for a minute. The site, because it's such a complex site, it's broken up into three parts. We keep saying Operable Unit 2. There's three units.

Operable Unit 1 is nonperchlorate contamination in groundwater. That's Operable Unit 1. That pump-and-treat has been going on for a while.

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Operable Unit 2, which is what we're here to discuss tonight, as Wanda said, is nonperchlorate contamination in soil, surface water, and sediment.

And Operable Unit 3 is the investigation of perchlorate contamination in all mediums, including surface soil, sediments, and surface water.

So, once the site was placed on the National Priorities List, there is tons of investigation that was conducted during the 1990s and various activities were performed with DEP's oversight.

And then in 2010, EPA took enforcement lead on the site. And once that was done, EPA negotiated with the Potentially Responsible Parties, and we have an order in place that requires the PRP, which is SMC and TRC, to perform a remedial investigation and feasibility study and to come up with a remedy which we select. And, you know, that's what we're here to talk about tonight.

When I talk about "the site," the

site includes the SMC facility located at 35 Southwest Avenue and it also includes another parcel, which is the farm parcel, which is located at Northwest Road. And the farm parcel was bought by SMC just so that they could implement the pump-and-treat system.

And another portion of the site is the Hudson Branch. You really can't see too well in here, but it runs along the southwest corner of the facility and goes to Hudson Pond, Burnt Mill Pond.

The two areas of interest for the site is the facility and the Hudson

Branch. I'm going to go into a little more detail about exactly what's located at the facility.

I know you probably can't see this too clearly, but I have a larger map over there if you want to look at it later.

In general, most of the facility is covered by buildings, asphalt, and concrete cover. And this is a production area, which is the largest

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area of the site -- former production area. It's the largest area of the site and most of it is covered with buildings, like I said. And this is the area where most of the manufacturing processes were conducted.

The former lagoons, right here, those were actually the root of contamination to the groundwater. When the manufacturing first started, they had online lagoons and wastewater was poured directly into them and it went into groundwater.

But those lagoons have been remediated by SMC with DEP's oversight. So, it's clean. The waste that was there was excavated and taken offsite and replaced with clean fill.

And the area that we're most interested in is the eastern storage area because in that area, there is no cover. No work was done there like in the lagoon, where there was actually remediation. So, there's no cap. That area is of interest to us.

There's also another area, the southern area, located here.

And this is the restricted area, which I'm sure you're all aware of, that contains radioactive waste. It's covered by a chain-link fence, with barbed wire, and there's signs posted so that people will know what it is.

And these green areas are the natural restoration areas that -- it was a part of a settlement agreement where for habitat purposes, soil was placed in there with cover so that, you know, habitat would have someplace to be.

The Hudson Branch. This is a better picture of the Hudson Branch. Like I said, it runs along the south edge of the facility and discharges to Burnt Mill Pond down here.

An area to note on this site is right here, a ponded area where water settles. And this is an area of interest, during our investigation we found this to be an area of interest. And it's located near the corner of

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Northwest Avenue and Arbor Street.

Next, the actual investigation that was performed. The purpose -- like I said before, there was tons of study that was done previously. There was an RI that was performed in the 1990s. So, here we are, doing another RI.

Why are we doing this?

There were areas that were not delineated. This is just basically -- our study is basically to fill the gap that was left over from the other investigation. And Operable Unit 2, what we're here for tonight, is just contaminations in soil, sediment, and surface water.

And the RI data that we collected identified sources of contamination, contaminants that may be of potential concern that we have to address, and just the pathway that those contamination, you know, migrates into the environment.

And, also, the concentration of contaminants at points of exposure to human health and the environment. How is it getting to humans and ecological risks?

As part of the remedial investigation, we investigated -- we took samples all over the facility in the various areas that I showed before, and we also collected sediments and surface water from some additional areas; on-site impoundments, Hudson Branch in certain locations -- the Hudson branch is about two to three feet wide in most locations -- and, also, Burnt Mill Pond, which is owned by Vineland and was drained in 2012 due to a failure of the dam. We're not sure when that's going to be reopened. When Burnt Mill Pond is full, it's approximately 2.5 feet deep.

And we also took -- we are required to take background samples to see if there's contamination that's actually coming onto the property, coming from upgradient onto the property. So, what we used for surface water and sediment was Burnt Mill Pond, and it was studied for background information.

Like I said, samples, there were tons of samples that were collected. And those samples were evaluated, and we came up with two areas, two areas that there was a problem. It was, you know, high concentrations or it presented a risk.

And these two areas were the facility soil, the soils in -- it's on the facility in the eastern storage area. There's actually a -- I think I have a picture in the next slide that shows you exactly the shape of it and what it looks like.

And, also, in the Hudson Branch, we found sediment contamination that we know has to be addressed.

Like I said, these are the two areas of contamination that we identified. And once you identify it, it has to be addressed.

I have a figure here. This figure

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will just give you an idea of what I was talking about with all the samples. All over, we took samples all over the property.

And this area right here in red, the area in red, this is the area of concern. It's about 1.3 acres and it's in the eastern storage area of the facility.

Like I said, you can see there are tons of samples that have been collected.

You probably really can't see this, but what you should concentrate on is the areas in red. These areas over here are where we found a problem, and it has to be remediated. Like I said, I know you really can't see it, but if you look at the red areas, those are areas that we found of concern.

And, you know, once a remedial investigation is completed and we identify areas and chemicals of concern, we then have to do what Michael was talking about before: We then have to

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do the risk assessment to see if there's a problem to human health and, also, to the ecology, ecological receptors.

And Michael will now give you a brief discussion of how we go about figuring out what the risk is based on the chemicals that we found.

MR. SIVAK: Thank you.

So, once we've identified the nature and extent of contamination in the onsite facility soils and in the Hudson Branch, that allows us to go to human health and ecological risk assessment.

What we're trying to do is we're trying to figure out what are the risks if there is contact, if there is exposure to this contamination now, the way the site currently exists, or in the future if no action is taken? How might the facility change? How might populations change in the future? And what would be the risk if no action is taken both from the human side and from the ecological side as well?

The human health risk assessment has four steps to it.

The first is hazard identification. Yes, we identified lots of different chemicals across the facility and in the sediments, but not all of those chemicals are of particular concern to us. Some of them are detected very infrequently. Some are detected at very low levels, below levels of any kind of toxicological concern for us.

So, this hazard identification step allows us to concentrate on those chemicals that are most significant as far as the potential to be associated with adverse health effects.

Then we look at the exposure assessment, which is how might people be exposed now? How might they be exposed in the future?

We ask questions like: What is the reasonably anticipated land use in the future? How is the land being used now?

For the surface water and sediments, we look at how frequently might people access those sediments or how frequently might people access that surface water?

The toxicity assessment looks at databases of published literature regarding the health effects associated with exposure to these types of chemicals and what levels you need to be exposed to before we start to see evidence of some of these adverse health effects.

And then we summarize all of this

information in a risk characterization.
We look at what chemicals are out there, how people are exposed to them, and what levels are associated with adverse consequences in order to characterize what the risks might be.
And if those risks are above what Congress has identified for our program as acceptable levels of risk, then action needs to be taken to reduce those risks. If you exceed these acceptable

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levels of risk, then we're required to reduce those levels of risk by remediation, by introducing some type of a control to reduce exposure.
The ecological risk assessment follows a similar type of process. Again, we look at what kind of contaminants we have seen out there, we look at what type of ecological receptors would be present.
Ecological receptors have very different sensitivities than human receptors to certain chemicals. You will notice as we go through this that there are some chemicals that are associated with ecological risk but we don't have any human health risk from them and that's because some of these

ecological receptors, certainly in the benthic community in the sediments, some of these ecological organisms are very sensitive to metals, for example -- that's what you'll see at the conclusion of this -- and we see adverse health effects in those communities at much

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lower levels than we will see in humans.

So, in the human health risk assessment, our goal is to protect the reasonable maximum exposed individual. We look at what is the most exposure we can reasonably anticipate somebody to have at a site.

For example, we know that the site is currently a commercial/industrial facility. And we looked at all the pieces of information that were available to us regarding what the likely and reasonable anticipated land use for the facility would be.

And when we looked at things like zoning, historical land use, town master plan, things like that, that led us to believe that the most reasonable anticipated future use of the site is commercial/industrial.

So, we then were looking at: What

is the reasonable maximum exposure for a commercial or industrial worker at a facility like that?

We know, for example, that that

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type of worker who is exposed to contamination 250 days a year -- which comes out to be 50 weeks a year -- for five days a week for a period of about 25 years, that was our typical, standard, commercial/industrial scenario, and that's how we're assuming that people are exposed. We believe that to be the reasonable maximum exposure that we would expect at the site.

We also look at exposure in the absence of certain institutional controls. So, for example, if there is a cap on a property or there is a fence restricting exposure, we don't consider that because there's no reason to believe that fence will exist in the future. So, we would assume that people would have exposure to the areas, that we looked at that without those type of controls.

So, the conclusions of the human health risk assessment. When we looked at the facility, as Sherrel mentioned,

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we found our highest contamination in that red area of the eastern storage area, which is here.

Is that right, Sherrel?

MS. HENRY: Yes.

MR. SIVAK: Thank you. I don't have my glasses on, so I have a hard time looking that far.

So, we found our highest concentrations of contamination in that area.

When we looked at the different exposures and the different populations, we looked at onsite workers exposed to soil, we looked at recreational trespassers exposed to soils, and we looked at current and future construction and utility workers that actually have to go down into the soil if they're doing construction work, if they're doing utility repairs, things like. They would be exposed to contamination at depth, and they would be the only folks that would likely have that type of an exposure.

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We also looked at a future residence scenario. I said that wasn't our likely anticipated future land use, but we included this as well in our scenario just because we wanted to see if there were any unacceptable risks to residents in the area that might limit any type of future development or any type of future exposure.

In the Hudson Branch and Burnt Mill Pond, we looked at current recreational trespassers. We focussed on the adolescents, which is a more sensitive population than the adults. That was the population we chose to focus on as well with exposure to surface water and sediment.

We get our toxicity information from databases that are -- they include laboratory studies, they include epidemiological occupational studies that have been peer reviewed in scientific literature. And this information is used all over the world. EPA databases are considered one of the

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world's most rigorous sources of this type of information, and that's where we get our information from.

We also look at two types of

health effects. We look at those type of chemicals that have been known to be associated with cancer and then we look at all other types of health effects; things like central nervous system effects or GI effects, things like that. So, we look at these two different types of health effects.

The conclusions of the risk assessment once we went through that very health-protective process and once we looked at all of that information, what we concluded was that the unacceptable human health risk for the facility workers was limited to future construction and utility workers.

And the only thing that really exceeded our acceptable levels was inhalation of fugitive dust in this area from exposure to vanadium in the soil.

So, that means that as these

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workers are digging in the soil and they are generating dust -- and that includes contamination of the surface and the subsurface -- that are generating this dust and they're breathing that in, in an everyday sort of worker kind of scenario, we have a slight unacceptable risk; the acceptable level is one, and we're at level two.

We looked, as I said earlier, at health effects that are associated with the risk of cancer. And all of the cancer risks that we evaluated were within our acceptable risk ranges. So, we found no unacceptable potential for incidence of cancer based on exposure to facility soils.

We did find this one slight exceedance of a noncancer health effect. This is for vanadium.

Then when we looked at Hudson Branch, all of our health risks, both cancer and noncancer, are within acceptable levels. So, there's no danger for any unacceptable human health

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risk in the Hudson Branch.

Now, on to the eco. Again, I'll kind of talk you through the eco process as well.

What we found in the facility's soils, again in the eastern source area, vanadium again posed a problem to the ecological community. And you also have the chromium that showed an elevated unacceptable hazard for ecological receptors in the eastern source area soil.

In the Hudson Branch -- and this is probably the biggest difference between the human health and the ecological risk assessment -- we found that we had unacceptable ecological risk in sediment from chromium, vanadium, copper, lead, and nickel. And that was basically in that area Sherrel identified, that ponded area along the Hudson Branch.

We collected samples all along the Hudson Branch. It was really in that area, it was in the ponded -- I

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apologize.

We did see some problems all throughout the branch, but, again, in the ponded area, which is kind of where some of the stuff deposits, that's where we found some of our highest levels.

And, again, you can see along here -- this is not the best plan ever -- you can see from the Burnt Mill Pond along here, and some of these different colors reflect the different unacceptable risks or different levels of chemicals seen throughout.

So, in summary, the chemicals of

potential concern, and these are the chemicals associated with unacceptable health risk at the site: On the facility soils in the eastern storage area, we have vanadium for both human health and ecological risks, and then we had chromium for unacceptable ecological risk; in the Hudson Branch, we had chromium, copper, lead, nickel, vanadium, and these were all limited to unacceptable ecological risks.

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These are the chemicals that we're going to consider when we move into the feasibility study stage. We're going to look into what type of technology and what types of treatments are available to address these chemicals in soils and in sediments.

MS. HENRY: Once the risk assessment is completed, we have to come up with objectives: How are we going to address the areas where risk was identified?

So, what we do is we come up with what we call remedial action objectives. And for this site, because of where the risk was found, the first is to prevent human exposure to contaminated surface soil in the eastern storage area of the facility that pose an unacceptable risk; a noncancer hazard.

We also prevent exposure to ecological receptors that Michael was talking about, the different receptors, to contaminated surface soil in the eastern storage area of the facility

that pose unacceptable risks.

Those first two were associated with the facility soil.

And the third objective was to prevent exposure of ecological receptors to contaminated sediments in the Hudson Branch. Anything that poses an unacceptable risk, we have to take care of it, we can't just leave it. We have to prevent exposure of ecological receptors when risk is presented.

Once your objective on the risk assessment is completed, we have to come up with cleanup numbers that we think will be protective to human health and ecological receptors.

So, the facility in the eastern storage area, the contaminants of concern, total chromium, we have a number of 44; and hexavalent chromium, 20; and vanadium, 54. And those are chemicals of concern as far as the facility area.

On the Hudson Branch, as Michael said, there's only ecological risks.

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Chemicals, also total chromium, vanadium, copper, lead, and nickel, and you see the various numbers. Total chromium is 1,275; vanadium -- if you notice, the numbers are different because on the facility, we're talking about -- it's not ecological. It's we're talking about ecological receptors, and on-site there's a more human exposure element.

Once we have a cleanup objective, we then look at different alternatives that will address -- that will address these goals.

We came up with four alternatives for the site. The first one is the no action alternative, and that's a requirement by Superfund that all -- you have to look at no action as a baseline to consider for comparison with other alternatives. And there's no cost associated with that because you evaluate it as if you're going to do nothing; you're not going to maintain anything that's onsite, you'll do nothing that costs money.

Alternative 2 is institutional control and monitoring. Institutional controls are deed notices, restrictive covenants, and, also, local ordinance that would prevent -- you know, you put deed notice in place, that would prevent someone that's on the facility, they wouldn't be able to -- residents would not be able to live on that. That's what deed notice prevent, certain actions from taking place.

Alternative 3 would be capping facility soils. That's the eastern storage area. It's approximately 1.3 acres. You would cap that, and institutional controls would be placed to ensure that there could be no residential -- it couldn't be residential, it has to stay industrial. And all the previous remediation that happened at the site, these institutional controls will ensure that they're maintained properly. And the cost of that portion is $640,000 --

excuse me, Alternative 3, $5 million.

Alternative 4 would be excavating. For Hudson Branch, the remedy would remain the same; the only difference on the facility, you would be excavating instead of capping. But the remedy for the sediments, like I said, will remain the same, and that costs approximately $11 million.

MR. SIENCZENKO: Excuse me, I'm sorry.

You were showing before on number one and number two, the pictures before, what contaminants you have on the site. And all the contaminants going down the stream are ten, twenty times more than what's behind the pile of crap.

All right?

So, what I'm saying is if you go to Alternative 4, you have -- coming down the hill --

MS. AYALA: Sir, I'm sorry.

Can you just keep it to the end?

Let us do the presentation, and then people will be called in order to

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comment because it's too disruptive and the stenographer won't be able to transcribe it properly.

MR. SIENCZENKO: That's fine.

MS. HENRY: Once we come up with alternatives that we think can address the risk that was identified, we then evaluate it against EPA criteria, nine criteria. Basically, the nine criteria, we have them so that you can address -- the CERCLA requirements to address any additional technical and policy consideration that may prove important for selecting among the various alternatives.

And, like I said, there's nine criteria. The first two criteria are what we consider threshold criteria. And, basically, in order for you to consider a remedy, it must meet these two criteria.

It must be protective of human health and the environment. And if it's not, if you see that an entity will not protect human health and environment, we

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can't include it.

And the second one is compliance with applicable and relevant and appropriate requirements. This is state guidance, EPA, you know, all the federal and state goals that are in place. We have to make sure that any remedy that we look at is in compliance with state and federal guidelines.

The next five alternatives are what we call the balancing criteria.

The first one is long-term effectiveness and permanence. And, basically, the long-term effectiveness and permanence look at the risk, how will the risk be managed, and to make sure that the risk has for a long time -- you know, assess the risk.

And the adequacy and reliability of the control.

Reduction in toxicity, mobility, or volume through treatment. You prefer treatment technologies and, you know, you want to reduce the volume through treatments.

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And short-term effectiveness is in the short term, what risk would be presented to the community or to, like when Michael was talking, he was talking about utility workers. Short-term effects, how does that remedy address the short-term exposures?

And implementability. This is how easily or readily can the remedy be implemented?

The final, seven, is cost.

Basically, what you're doing is comparing each individual alternative against all nine criteria, and once you're done with that, you compare each of them using the nine criteria.

The final two criteria are the modifying criteria. These are evaluated after the comment period closes.

State acceptance. During the comment period, DEP will send their comments.

And for community acceptance, community acceptance won't be evaluated until after all comments are received

and the comment period closes. And any comments that we get, we will include, as Michael said, in the responsiveness summary of the ROD.

So, we went through this process for the four alternatives that I showed you before. Alternative 1, we put no action; 2, institutional controls --

And what we did, using the nine criteria, we compare them individually to see if they meet the nine criteria and then we compare them together. It's a balancing we do to see whichever one we think based on all the criteria would be more effective to cleaning up the site. And then we come up with a preferred alternative.

And after going through the process of the nine criteria, what we came up with was Alternative 3. And basically, it would be capping facility soils, the 1.3-acre facility soils in this area, and then maintaining the existing covers that's on the site.

The site is largely covered with

asphalt, concrete, and there's saw caps on the site. So, we'll make sure that those are maintained. That's for, like I said, capping facility soils.

For the sediments in the Hudson Branch, we'd excavate the sediment, those that are above the PRGs. We'd excavate those and then we would replace it with clean fill.

The institutional controls that I talked about, those could be easements or restrictive covenants, restricting what can or cannot be done at the site.

And, also, the cap that we're putting in place, we've got to make sure that it stays in place. So, institutional controls help us to make sure that that happens because if you select the remedy, you want to make sure that it's maintained.

Let me back up. Contamination above state guidelines was detected in Hudson Branch; however, when we did the risk assessment, we found that it didn't present unacceptable risk.

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So, what we're going to do in the area of the Hudson Branch surface water, we're going to monitor it to ensure that it eventually meets state standard. And we think this will happen because all the areas where we found the surface water contamination, it was where the sediments -- where the highest levels of the sediment were found. So, we feel that once we take that up, the levels -- you know, we think that's the source that's causing the surface water to be high, to be above state guidelines. So, what we would do, like I said, we would monitor that.

And the area on the Hudson Branch that I showed you, there was a ponded area that was down near Arbor Street. What we're going to do with that area, we're going to assess to see if additional things need to be done. And because we're leaving waste in place, we're required to visit it, to make sure -- we're selecting a remedy and we want to make sure the intent of the

remedy is maintained. So, what we do every five years is we go back to the site, look at everything that we did, check and monitor results to make sure that levels are going down, we make sure that the cap is -- there's no cracks to the cap, and, you know, just to make sure that the intent of the remedy is being maintained.

And that's a requirement of CERCLA. We have to do that. So, even after a site -- if a site gets off the list, National Priorities List, we still have to make sure that the remedy is doing what the intent and purpose would be, and we would do that every five years.

And that's the conclusion of my presentation.

So, what happens next?

Once the comment period closes, we would -- a Record of Decision is written by EPA documenting the decision, the preferred decision. And any comments that we receive will be put in the

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responsiveness summary, which is an attachment and a part of the ROD.

And what happens, once a remedy is selected, we would try to get the potential responsible parties to pay for the remedy. So, what we would do, we'd negotiate with them and a consent decree would be signed, which is enforceable, and the PRPs would implement the remedy. Ideally, that's what we would want to happen.

But if we don't negotiate with PRPs and they don't sign, we would have to use fund money, which, as most of you know, there's not a lot of that.

Once the consent decree is signed, we -- this is to do a design of the remedy that was selected, remedial design, and then the remedial action. That's the actual construction of the remedy. That takes place after the consent decree is signed. We have to design the remedy -- this is all with EPA oversight, we have to approve everything -- and then there's
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implementation of the remedy.

And, normally, after the Record of Decision is signed -- you know, it takes probably on average probably two, two to three months, to finish negotiations with the PRPs. And as far as remedial RDRA, that's probably another six to seven months.

UNKNOWN SPEAKER: So, within a year it will be done?

MS. HENRY: Well, we have to follow the process because we need to have an enforcement document in place so if the PRPs -- so we can hold them to it, so that they will do exactly what the remedy says they have to do, exactly what it says. So, we have to negotiate.

Like we said, in the proposed plan it said that the comment period ended on that Saturday, but, normally, what we do if it ends on Saturday, we make the Monday. Even though that Saturday is thirty days, we make Monday the end of the comment period. So, there's a difference in the proposed plan than

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what you see here tonight.

But the comment period ends July 28, and you can send all your comments to me via -- you can mail it or e-mail.

MS. AYALA: We'll now open up the floor to comments and questions, and we're going to do it in numerical order, starting with No. 1. If No. 2 and No. 3 could stand by so you can come up to mic right afterwards, I would appreciate that.

When giving a comment or asking a question, please state your name so the stenographer can transcribe it.

MS. WILLIAMS: My name is Loretta Williams, 310 Oakwood Drive, Newfield.

I thought there was another alternative, Alternative 4?

MR. SIVAK: We did show Alternative 4, yes.

Would you like us to go back to that.

MS. WILLIAMS: Yes. That's important.

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I read this before. I got this from the library. I'm opposed to Alternative 3 because it excavates and then caps.

That's been done all these years when they capped the lagoons and capped other areas of that site, and it didn't do any good because those metals and chemicals are still so extremely high. And it was over thirty years.

Alternative 4 actually says to excavate and then to be sent offsite to a licensed hazardous waste facility.

That needs to be done because this town should not be a waste site for radioactive or chemical waste. This facility is not licensed for that, and this town is -- and I don't like on any of them, even Alternative 4, that they have institutional controls, where they have deed restrictions for residential and commercial use.

This town will never be able -- if that stuff stays here, this town will never be able to develop that land, that

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67.7 acres of property. This town is 1.7 acres (sic) and this is a big chunk of our real estate that we can't do anything with.

This site should be cleaned up properly because nobody here is going to buy the stuff. We had it out with the NRC back in 2006, and they decided to turn it over to the State of New Jersey. They didn't want to deal with us.

I mean, we're no fools here and

we've lived with this for a long time. People have gotten sick and God knows how many children actually died from illnesses they got from this site.

This company just doesn't want to take responsibility for their mess. They want to leave and leave it here for somebody else, and it's not right. I'm very much opposed to this.

And I also believe that before anything is done, there should be a groundwater study of this site by the U.S. Geological Survey. We have two wells in this town polluted with radium.

Both of our wells. They had to put in over a million dollar system to clean this up.

The town can't afford this. The taxpayers are already overburdened with school costs and the fact that the state is cutting back aid to municipalities. We're overtaxed and we can't take it. Eventually, if it doesn't stop, we're going to have to go back to Franklin Township, where we were originally, because these small towns just can't do it.

That's my comment.

(Applause)
MR. SIVAK: Again, before we go any further, I just want to again state that the purpose of tonight's meeting is not to discuss the NRC, it's not to discuss the slag pile, it's not to discuss the radioactive material.
It's to discuss the chemical contamination and the onsite facility soils and the Hudson Branch. So, that's where we need to stay focused on this

evening.
We understand that there are a lot of concerns and issues about that, but tonight's meeting is about the alternatives for OU2, which is the chemical contamination in the facility soils and in the surface water and sediments of the Hudson Branch.
So, if you could all please try to stay focused on that, that would be very helpful to us.
Thank you.
MR. SCANCELLA: My name is Frank Scancella, 103 Northeast Boulevard. I've been here since '88, and so has that pile. I think a couple of things:
That if you were to tear down your house and leave it there, you would be

fined. You wouldn't be able to leave it there.

You don't want to discuss the slag pile, but where is the source of this chromium and vanadium coming from if not there?

I'm not going to discuss that.

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How much land will be left for commercial -- actually, it won't be commercial, it will be industrial use.

MR. SIVAK: It would be commercial or industrial.

MR. SCANCELLA: If we could have a restaurant on the site, that would be acceptable, if you can find somebody who's going to build a restaurant on that site. It's just industrial, is what it's going to be.

So, we're losing revenue. It's harder to get an industry to move on a backstreet than it is on the highway.

I don't see anything positive about leaving the pile there because we lose that amount of land and we'll never be able to develop it.

And what is the benefit to the borough to have that capped?

Are we getting a yearly fee?

Is somebody going to pay us for having a dumpsite on our property?

Or do we just have to put up with it and go from there?

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MR. SIVAK: When EPA selects a remedy, we look at -- and I said this a little bit earlier, but we look at what is the reasonably anticipated future land use of the site?

We look at many pieces of information that are available to us as we're trying to figure out what that reasonably anticipated future land use may be.

Some of EPA's guidance documents -- and we use this process at all of our sites around the country -- allow us to look at things like historical land use, surrounding land use, current zoning, town master plans, things like that. There are things like that that help us to try to figure out what is the reasonably anticipated future land use of the site.

We can't require everybody clean up everything to residential standards. Our law does not allow us to do that. Our law requires us to look at what is the reasonably anticipated future land use and develop cleanup levels for contamination that is protective of human health based on reasonably anticipated future land use.

So, when we looked at all the information available to us for this site in the Town of Newfield and looking at all those things that I mentioned, we believe or we concluded that the reasonably anticipated future land use would remain commercial or industrial; would remain industrial or possibly be commercial.

Our cleanup plan, the cleanup numbers that we identified earlier, the levels of vanadium and chromium that are in the onsite facility soils, are protective of public health and the environment under commercial and industrial development scenarios.

The remedies that we have looked at here, including our preferred remedy of Alternative 3, allows -- is protective for that future land use and allows for commercial and industrial land use to be -- to take place in the future.

MR. SCANCELLA: So, would you say that half of the property would be usable when it's done?

MR. SIVAK: I think that any area that doesn't -- the entire property that we looked at, all the soils that we looked at, all the data that we evaluated in the figures that Sherrel showed earlier show where we collected data. All of those results, all of the data, suggests that the land is appropriate for redevelopment of commercial or industrial except for that one little red square area where we're going to take an action. Once we take the action in that area, all of the soils are appropriate for commercial or industrial redevelopment.

How that happens, EPA is not involved in what the development would be. That's up to the property owner, that's up to other folks. That is not up to EPA to determine what moves in

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once we get the site cleaned up.

Our goal, our mission, is to deliver a property that is appropriate for a specific type of redevelopment based on what we believe is the most reasonably anticipated future land use for that site.

MR. SCANCELLA: Let me change my question.

How much land will be used for the capping?

MS. HENRY: 1.3 acres, that red area.

MR. SCANCELLA: That little square area right there?

MS. HENRY: Yes.

That's the only area we found that presented a problem, just this area.

MR. SCANCELLA: So, you're going to shrink that down to 1.3 acres.

MS. HENRY: No, no.

The actual area that presented a risk, that has contaminants of concern, is the 1.3 acres in the eastern storage area.

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MR. SCANCELLA: That's fine.

MS. PALADINO: Good evening. My name is Linda Paladino. I reside at 205 Fawn Drive in Newfield.

And although I have absolutely no expertise in environmental engineering, I believe my questions are somewhat generic but related to the information presented tonight.

What was our ranking on the priority list in the NPL?

You said once we were identified as a Superfund site, we received a ranking.

MR. SIVAK: The score, the numerical score that comes out of the model requires that -- it's a number. Any number above 28.5 is eligible for listing on the NPL.

I don't know what the number was for this. I know it's above 28.5.

It doesn't matter at that point if it's 28.6 or if it's 100. Once it's above 28.5, it's eligible for the NPL.

So, I don't know the answer to

that.

MS. PALADINO: Remediation was not based on our ranking as far as priority on that list?

MR. SIVAK: No.

All sites that are on the NPL are dealt with the same way.

MS. PALADINO: And you said at one point -- I'm assuming after remediation -- it could be deleted from the program itself.

Is that correct?

MS. HENRY: That's the way the process -- all sites, we have to look at that. That's part of the process. That's the goal. You would love to get it deleted. It happens at some sites.

MS. PALADINO: Although you said with Alternative 3 we would be monitored for a period in five-year increments?

MS. HENRY: Yes.

MR. SIVAK: Once these remedial action objectives have been met, we're going to implement a remedy. We're going to implement a remedial action to

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address those unacceptable risks that we identified. Our goal once we implement that remedy is to prevent human exposure to contaminated surface soils in the eastern source area, prevent exposure to ecological receptors to contaminated surface soil in the eastern area that pose unacceptable ecological risks, and to prevent exposure to ecological receptors to sediments in the Hudson Branch.

So, once we meet these objectives, once we have -- if our preferred remedy is what ultimately is the final remedy for the site -- let's just go with that for the purposes of our conversation -- once we cap these soils, once we excavate these sediments, and once we -- sorry, once we cap these soils, and cap these soils and excavate these sediments, and we meet our surface water criteria, these objectives will be met, and, therefore, the site is eligible for deletion.

Because we are still leaving

contamination behind that requires these caps to be maintained. We have a requirement under our law to continue to monitor the remedy to ensure that it remains -- that its performance and its protectiveness remain.

We formalize that. We review that constantly. Every year, there will be some sort of monitoring plan for that cap or for those sediments --

MS. PALADINO: Does that include testing when you say "monitoring"?

MR. SIVAK: It may be testing.

We're going to work that out when we get to the remedial design phase. It may be testing, it may be a visual inspection of the cap.

Capping metals is not an uncommon

remedy based on Region 2 and based on national sites. So, that's a very typical kind of remedy that we have. Sometimes a cap can be evaluated just through a visual inspection.

We memorialize that performance and the protectiveness of the remedy

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every five years in a document called a five-year review, but we are constantly monitoring the performance and the protectiveness of that remedy regularly, not just every five years. We just memorialize it in a document every five year, but we're doing it all the time.

Does that make sense?

MS. PALADINO: It does.

But wouldn't the contamination continue under the cap into the ground soil itself or into the groundwater under the cap?

Does that -- the cap, when you say "cap," it reminds me of since these elements are proven to be -- could be a cancer risk for humans, it makes me think of an analogy of going to the doctor and saying, "Yeah, you've got some skin cancer there. We'll put a Band-Aid and come back and I'll look at it once every five years."

So, wouldn't the cancer in the case of my analogy continue to -- does the contamination continue under the

cap?

MS. HENRY: Like I mentioned before, Operable Unit 1 is looking at the groundwater, looking to see what's in the groundwater. And, you know, eventually -- right now, there's a pump-and-treat system in place, and we're looking at that right now. And that may or may not be a new ROD amendment to change that, but there's a lot of stuff going on in Operable Unit 1, and you'll be informed of that.

Like I said, this is for Operable Unit 2, but there is a study of the groundwater.

MS. PALADINO: What is the history of that, though?

Does contamination continue under the cap?

I guess that's my question.

MR. SIVAK: There's a couple of parts to the answer to your question, and I'll build on what Sherrel said.

We've already evaluated the groundwater. We know what's in the groundwater.

The remedy in our ROD for groundwater, our Record of Decision for groundwater, hasn't proven to be particularly effective, so we're looking right now at pilot studies to make it more effective. But we know what's in the groundwater. We characterized that.

MS. PALADINO: If I could stop you for a second.

If you're going to monitor this and you come back, the cap's in place, you come back, in a year you decide to do another groundwater sampling because you want to make sure it's not continuing to increase, and you find that, in fact, the cap on it is not doing what you hoped it would do, would you revisit the plan for that --

MR. SIVAK: Yes.

MS. PALADINO: Or once you say it's number three, it's number three no matter what?

MR. SIVAK: No, no.

If we find out at some point in

the future that whatever remedy we ultimately select and implement at the site is no longer performing as expected or is not protective of human health or environment, we will go back and we will revisit that.

MS. PALADINO: Okay.

MR. SIVAK: To go back to what your question was earlier, we characterized the groundwater pretty well at this site. We've been monitoring it for twentysome, thirtysome years.

And, first of all, we don't find vanadium in the groundwater. Vanadium was one of our chemicals of concern in the soil, but we're not finding that in the groundwater.

And the unacceptable risk from exposure to vanadium in soils at the facility is associated with inhalation of dust. So, the form of vanadium that we have out there and the type of vanadium that we have out there isn't migrating. It's staying in the soil.

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And then when it gets mobilized in the air, people are breathing in those little dust particles, and that's what's causing our unacceptable noncancer health risk.

MS. PALADINO: Right.

And what about the chromium?

MR. SIVAK: We are seeing chromium in the groundwater. The lagoons that were remediated under the state program addressed a lot of those issues. The chromium levels that we're seeing out there now, we don't really believe those are a source to groundwater anymore. We believe the levels of chromium that remain in the soils out there are low enough that they're not really leaching to groundwater at all.

We believe that, again, the only risk from chromium in the soils is to ecological receptors. So, we believe that putting a cap on these soils prevents that exposure from happening and, therefore, allows us to meet this remedial action objective of reducing

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the exposure, and, therefore, reducing the risk.

MS. PALADINO: Okay.

And you said once you get the plan in place, you're negotiating to get the owners of the site to help pay for the remediation.

MS. HENRY: Responsible parties.

MS. PALADINO: Now, when I think of negotiating, I'm thinking, "Take a walk. I'm not interested. Do whatever you got to do to me."

So, if they say that, we all know, as you, yourself, commented, that since we have thirty years of data but no remediation that did the job, so to speak, the Superfund money is dwindling down to zero, and, to my knowledge, Congress is not jumping up and down holding midnight sessions to reimburse the money.

So, if that should happen, you negotiate and they say, "Do what you got to do to me, I don't care," and there's no money, who is going to foot the bill?

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Or is the program abandoned?

MR. SIVAK: No.

MS. HENRY: Based on the relationship that we've had with the PRP during the RI and FS, we believe that we will be able to negotiate with them and that they will --

MS. PALADINO: But in the event they do not.

MR. SIVAK: We have enforcement tools available to us where we can order them to do the work. If they don't willingly sign on to do the work, we can order them to do the work.

MS. PALADINO: And to pay for it?

MR. SIVAK: Yes, to the ability that they can pay, yes, we have enforcement tools that will allow us to order them to do the work.

MS. PALADINO: Okay.

And you mentioned before about the radioactive element in this, but, according to your statement tonight, you have a fence and signs around the radioactive piece of this.

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How does that -- how do signs or a fence stop radioactivity from getting into the air, the ground, the water, the soil?

I don't understand why that should make us feel better, to have fences or signs.

MS. HENRY: I was just basically describing what was there.

MS. PALADINO: Okay.

MR. SIVAK: Again, first of all, keep in mind that the radioactive slag pile that exists is not part of the Superfund site right now.

MS. PALADINO: Right. I'm just bringing it because you mentioned it in your presentation.

MS. HENRY: It was for informational purposes.

MS. PALADINO: I'm just going to conclude by saying that I also am not in favor of Alternative 3.

And Alternative 4, when we're talking about a risk, to me, the risk of any child, adult, teenager, present,

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past, or future, is worth the price.

And what would be the price of a human life?

Because I'm sure data will show that one of the reasons we're on the Superfund list the last thirty years is because there have been risks to human life in this area. And that's been documented.

The difference financially between Alternative 3 and Alternative 4 is $6 million. And if you had to treat just a handful of cancer patients, you would well exceed $6 million.

And isn't that -- isn't a life worth that?

To me, it is.

MR. SIVAK: Thank you.

(Applause)

MS. AYALA: Four, five, and six can come up.

MR. SIENCZENKO: Hello. My name is Walter Sienczenko. I live at 236 West Arbor Avenue.

I bought my property in 1989. Two

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weeks later, I had men in white suits walking past my property digging wells.

Now, Northwest Boulevard, a lot of people have cancer, a lot of women have health problems, they lose their children, they're stillborn, on Arbor Avenue all the way down West Avenue.

What I have now, a couple years ago people came to my property, put some wells in the back of it, took my fence down and had my sheep running all over West Avenue. No one asked me about the fence. Nobody put the fence back.

The problem is now we have a tiger by the tail in this town running violent in Newfield. The tiger, we can't talk about it because it's behind the fence, it's encaged. That's fine.

But the dust coming from it, the rain coming from it, everything coming off that tiger is going down the stream of water. That's why contamination on the other side of the pile is a lot smaller than the contamination in the area I live.

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By the way, my farm is right next to the farm parcel. Right next to it. I have seven acres. We have animals walk around, rabbits with all kinds of bumps on them and rotten skin, and deer dying. Hunters shooting deer on my property, they cannot eat it because of contamination, the liver, everything else inside destroyed because they're drinking from the pond.

So, how is it going to help us not talk about the whole thing?

The best thing to do is clean up the pile next to my house, clean up all that contamination, dig it out. The only problem is the mountain is still there and everything falls off the mountain, down the stream, goes down the river. No different than the thing that happened in Vineland Chemical. Same thing.

We cannot talk about the main thing, the tiger that's inside the fence.

My daughter-in-law used to live on

Rena Avenue, right here in Newfield.
Her name is Olivia Walsh. She grew up, she played in the back of Shieldalloy. She played in the back. They'd canoe, they swam in the retention ponds, kids swim in it, they played with barrels full of green stuff, slime, that they put on themselves. Well, now she's forty years old and has all kinds of health problems. She has problems with herself and her children.

And they had a fence around it. That's my comment.

Number four would be working fine, but first you have to eliminate the big problem. That's the problem.

I know what you're here for, but best thing is to take it out. But the whole problem is all the water is coming down the hill.

That's my comment.

MR. SIVAK: I know I said --

I'm sorry, are you finished?

MR. SIENCZENKO: Yes.

MR. SIVAK: Thank you for your

comment.

(Applause)

MR. SIVAK: I know I said before we weren't going to talk about the slag pile, and I give you guys a lot of credit because you're not really talking about it.

MR. SIENCZENKO: Right.

MR. SIVAK: But we're kind of talking about it.

MR. SIENCZENKO: It's there.

MR. SIVAK: It is there.

MR. SIENCZENKO: The invisible elephant.

MR. SIVAK: So, we're lucky tonight to have someone here from NJ DEP. Donna Gaffigan is the Project Manager for Shieldalloy. Donna works on the chemical side of the house at NJ DEP. She's not here representing the rad portion of the site, but I asked Donna if she could give an update on what's going on with the slag pile.

It is not part of the site, but she has a little bit of maybe

information that she can share with everybody tonight.

MR. SIENCZENKO: Thank you.

MR. SIVAK: Thank you.

MS. GAFFIGAN: I guess I'll just say this on the record, then?

MR. SIVAK: Yes.

MS. GAFFIGAN: I'll read it.

As many of you may know, in 2009 the Nuclear Regulatory Commission and the State of New Jersey entered into an agreement that transferred the authority to regulate the radioactive materials at the Shieldalloy site from NRC to DEP.

Shieldalloy has filed a series of appeals in the District of Columbia Circuit Court of Appeals challenging this transfer of authority. The DEP currently possesses authority over the radioactive materials at the site; however, the D.C. Circuit Court will determine if DEP retains that regulatory authority.

NRC supports New Jersey retaining regulatory authority. New Jersey, in

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turn, supports the NRC in its appeal and is participating in those proceedings as an intervenor, a legal term. Oral arguments on the hearing are set for September 2014.

For more information, you can contact the DEP Bureau of Environmental

Radiation at 609-984-5400. And that person's name is Jenny Goodman, so, she'll be able to answer questions.

Right now, we're apparently in legal limbo. We understand your concerns, but this is not the place to address those at this time.

MR. SIVAK: Thank you, Donna.

Again, that's kind of a status update on where we are right now. Hopefully, that gives you a little bit more information than we had before, and I suspect that Jenny's phone will be ringing quite a bit tomorrow.

MS. AYALA: Five, six, and seven.

MS. LESHAY: My name is Mary Leshay. I live here on Catawba Avenue in Newfield.

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People have already addressed issues. I want to make a comment.

With the economy the way it is and people looking for housing, that I come across incidents where veterans are looking to purchase homes in the area under the VA mortgage loan and are being denied because of the Superfund, because this is a toxic site.

I'm just wondering, are you aware of it, and is this being addressed so

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people know what's going on as far as getting loans?
Are you aware of that?
MR. SIVAK: We are not aware of that.
I know there are regulations in New Jersey for realtors to follow regarding disclosure of things they know about. I don't know what the regulations are. I don't know what they are required to disclose.
MS. LESHAY: I do know someone that wanted to live here back in Newfield, veteran from Iraq, and went

through the VA because he is a veteran to get a mortgage to purchase a home. And he was denied and told that they will not be able to give a loan within a 30-mile radius of the site.
MR. SIVAK: I've never heard that. I work on a lot of Superfund sites throughout New Jersey, a lot of communities that have Superfund sites in them, and I've never heard of denial of mortgage based on a 30-mile radius from a site.
MS. LESHAY: They were actually surprised to hear that too. They were

wondering because --

MR. SIVAK: I apologize I don't.

MS. LESHAY: That's all right.

We're concerned because of housing and people wanting to purchase homes.

MR. SIVAK: Thank you.

MS. LESHAY: Thank you.

(Applause)

MS. MERCKX: My name is Cindy Merckx, Sentinel of Gloucester County newspaper. I've been a reporter in this

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area over twelve years covering this story. Linda Paladino did a great job getting most of my questions.

What I wanted to ask is why did you guys go with number three instead of number four?

Of course, we see the money, but what was your reasoning to go with number three instead of number four?

I didn't hear that.

MS. HENRY: Well, basically, when we compared both remedies with the nine criteria, and based on what's already been done at the site -- there's areas that were capped already -- we thought it was a better balance. When you combine all the criteria, this one made more sense.

If you excavate one area, there's other areas where -- you know, that are capped, and that does not present a risk. So, those still remain --

MS. MERCKX: When you say there are other areas that are capped, is there anything in New Jersey that has

chromium as well as the same materials that are here?

Is there anything in New Jersey that you could relate this to so that we can feel a little bit, you know, easier as to it's going to work?

Is there any model that you're basing your decision on?

MR. SIVAK: First of all, the only difference between three and four -- they're both doing the same action in the sediments of the Hudson Branch, and the only difference is the onsite facility soils, and that's the capping versus the excavation.

MS. MERCKX: Right.

MR. SIVAK: The two reasons why we're even taking action in the soil are vanadium from a human health perspective, and vanadium and chromium from an ecological perspective.

MS. MERCKX: Right.

MR. SIVAK: So, because capping is an appropriate remedy at sites, because when we compare it against some of those

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nine criteria, like implementability, it ranks higher, short-term, whatever.

We do have other sites in the state where we've put capping in place for metals. I can't think of a site right now, a Superfund site, where we have chromium caps in place --

MS. MERCKX: I guess kind of what disturbs a lot of people when we read about caps, Franklin Township, thirty years ago, they capped a landfill, normal household waste; thirty years later, we have monitoring wells, now we have a methane gas problem. It leached across under the river and into houses, into their basements. And the town got stuck with the bill of taking a bond.

This concerns me for the residents of Newfield once you walk away, that they'll also, as Loretta Williams, who's been on this for a long time, there are concerns.

So, that's why I'm asking where your base of information is from, if it's in New Jersey, that has a successful track record as to why you went between three and four.

MR. SIVAK: We have looked at other sites where capping was selected as a remedy; some of them are older sites, some of them are newer sites.

We just did a remedy for a site in Jersey within the last year with mercury contamination, and we're capping that.

Jersey City has a lot of chromium ore processing residue waste where capping remedies have been selected; not under the federal Superfund program, but under other environmental programs as well.

So, capping for metals is pretty common. From an engineering perspective, the caps are easy to design.

For this particular site, because we're not concerned about leaching to groundwater here, we're concerning with interrupting the direct contact with this material, we have a lot of expertise in designing those types of caps.

We're not worried about things like methane gas from landfills. We don't have organic material decomposing producing this methane gas. Nowadays when we would be designing a landfill cap, we would include methane gas on there, we would monitor that as part of our operation and maintenance of that type of a remedy.

So, we do have a lot of expertise in designing these types of caps, we know what to look for when we're monitoring them in the future, we know how to ensure that they remain protective and that they're performing as we expect them to.

MS. MERCKX: The residents know it should be done full throttle and know that it's done and have that ease that after twenty years, that you're going to be back and checking.

Thank you.

(Applause)

MR. KNORR: Good evening. My name

is Ed Knorr, 1053 North Tuckahoe Road, Gloucester County, Williamstown.

I've been at several different hearings. And a lot of times my concern is, especially with this site -- I was here for the radioactive issue way back with the NRC.

Dates of interest: 1955 to 2006, Shieldalloy was in the processing mode; 1979, DEP addresses community at risk; 1986, State restricts the use of wells in the area; 1996, water treatment is done because of the lagoon issues and the groundwater.

The problem is through all this, in 1984, it was put on the Superfund site. The concern is all these years -- they were in business for 51 years, Shieldalloy. Today, we're talking about remediation plans. It's 2014. We're talking over a half a century of contamination.

And mostly what I've gotten out of this tonight is we're talking about the onsite contamination and not what has

occurred in the past and what's been traveling through the water systems, maybe the past twenty years, transport mode of a lot of these chemicals.

I've been in the environmental field, health field, for 34 years. As an environmental health investigator, a lot of times you have to try to connect the dots. They're not all that easy.

My concern and -- unfortunately, Senator Lautenberg passed away. I was trying to get a better understanding so that we could expedite the EPA Superfund to become more expedient. We spend too much time spinning wheels.

No offense to your health assessments, but I think they're as useful as used toilet paper. I just don't think that we can take those health assessments because the human body -- it's different for everyone.

Take, for instance, smokers: Some people can smoke and never have lung cancer; a person can smoke for two months and have lung cancer. We don't

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know.

The probability of concerns for the contaminants on this site is a very high risk. We can minimize that to a certain extent. Putting a cap in is not a solution, it's an excuse; it's an excuse used to say, "Out of sight, out of mind."

The caps are not the way -- you know, this is 2014. What are we going to do, cap every site all the time

because of a cost factor?
$5.1 million, so to speak, for capping and the cleanup of the Hudson Branch. $11.1 million for total cost. By the time we're done with all these seminars, all this spinning of wheels and everything, probably spend $15 million and we're back to capping.
Why can't we just expedite it, go ahead, remove everything?
It's a risk factor to the people of Newfield. When you talked about issues in the past or you're talking about the health risk of the present and

the future, we need to talk about the past. 1955 to 2014, a lot of time has passed.
What about the people growing up in those years? How were their bodies affected? What kind of contamination was there?
We don't know. Almost like the Ciba-Geigy issue in Toms River with the lagoons.
The problem is, I think the term was used "reduce" the risk.
In reducing the risk, do we reduce it a little or a lot?

In reality, it shouldn't be reducing the risk, it should be eliminating the risk.

(Applause)

MR. KNORR: In order to do that -- I think the one concern about the health assessment is that we didn't really look at the classification of people.

We're assuming adults, but what about the children?

The health assessment didn't break

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down to show children's exposure versus adults'. There's a very serious concern there because per body weight, there's an issue there with how much they can breathe, how much they can absorb. And this has been a long time with water contamination issues that we've had in our town.

The problem here, again, there's one to two foot. Now, in the paperwork, it says one- to two-foot cap. That's a big subjective type of move. Now, is it one-foot? Is it two-foot? Is it eighteen-inches? Is it sixteen-inches?

Don't know.

But even putting this cap in, when you put a cap on something, does that mean everything disappears? Out of sight, out of mind?

The problem is, you put the cap on something -- how did you classify these contaminants in the ground?

Are they stationary contaminants or could they have a transport risk?

MR. SIVAK: As I said earlier,

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we've been investigating the groundwater. We've been analyzing the groundwater for the last 25, 30 years. We did not see vanadium in the groundwater at all. We do not believe the vanadium is migrating through the groundwater.

We do know there's chromium in the groundwater; however, we believe that the major source of the chromium has been waste lagoons that have already been remediated. Those were actually where a lot of the processed water was dumped.

We don't believe that this little area, this 1.3-acre area, is a continuing ongoing source of chromium contamination to the groundwater.

MR. KNORR: I know you have certain CERCLA formulas, but in the future, why do we keep capping these sites?

The people in Newfield, surrounding area, they have to live with this every day. Now, if DEP or EPA

wants to set their field office on top of the cap and study it, that's fine.

But the concern is that we keep putting these caps on different landfills and different toxic waste sites, and, yet, when you look at the map of New Jersey -- you know, in 2010, we were considered the most contaminated state per square foot in the country.

That is a concern that statistically is associated -- not correlated, but statistically associated with health issues. The concern is why don't we start doing the program where we start cleaning these sites up?

We're only talking about $6 million to properly clean this up. Get rid of it. We don't need the cap.

Radioactive, that's a separate issue for a separate time. But clean up the site of any contaminants to make sure it is clean.

How much money is it going to cost to monitor every five years?

How do we know what happens

between year two and year four under the
cap?
     Maybe there is some type of
contaminant. There's just too much
variables and concerns for human health
to just put a cap and walk away from it.
The cap's like putting a dirty Band-Aid
on a cut; it will only last so long.
     You don't want to have to keep
turning around and monitoring this if
you don't have to. Spend the money now.
     Who's responsible?
     Shieldalloy. Shieldalloy
contaminated the ground.
     Know what's fascinating? If a
small business person dumped chemical in
his backyard, he's almost handcuffed and
taken to jail. He's given thirty days
to clean the site up. In front of a
judge.
     Now Shieldalloy, twenty years, and
now we're trying to negotiate?
     There's no negotiation. They pay
the price. Clean it up the right way.
They damaged it, they put a risk on

every resident in Newfield, and they shouldn't be left off the hook.

If they don't want to pay, take their grounds, put a lien on it. Somehow you have to recoup the money, I know, but, unfortunately, they're held accountable for the contamination.

And the question again comes: This has been a long time coming. Who was watching the store during all this contamination? How come this was left?

We have government agencies who oversee. Normally, you have a set protocol and it's a tiered level of knowing what companies produce what, whether it's radioactivity, whether it's chemical, hexavalent chromium, whatever concerns and issues. There's oversight to go in and see.

Somewhere along the line, somebody dropped the ball because the data showed that this contamination has been going on for, like, thirty, forty years. Granted, the EPA hasn't been around that long. DEP, I don't know if they've been

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around that long; sure don't look it, but maybe they have been.

However, the concern is opposition to the cap has to be -- you know, number four has to be the only way to go with this. Clean it up, and it's done with.

Thank you.

(Applause)

MS. AYALA: Eight, nine, and ten.

MR. TONETTA: Good evening. My name is Richard Tonetta. I'm Solicitor for the City of Vineland.

I'm here with Council Vice President Paul Spinelli and our Director of Health Dale Jones, as well as some residents of Burnt Mill Pond.

I've read your Superfund proposed plan, and I notice that it does identify areas of health concern, which includes the Hudson Branch as well as Burnt Mill Pond.

However, when I look through that, it gives only the proposal for the preferred alternative including excavating and disposing of sediment

that present an unacceptable risk to the environment and restoring the excavated areas only for the Hudson Branch. There's no discussion with regards to the cleanup of the Burnt Mill Pond.

There's a little concern, and maybe you don't know this, and I'm assuming the DEP does, Burnt Mill is a residential area, but, more importantly, it's a Green Acres park. So, it's funded by DEP.

Thousands and thousands of dollars have gone into this park for the use by not only the residents of Vineland, but, under Green Acres regulations, by the residents of the State of New Jersey. It's used for fishing, boating, birdwatching, walking. Again, it's located in a residential neighborhood.

I'm sure you're aware that parks, under federal regulation, as well as DEP, any cleanup has to go to a residential quality; not industrial quality as you're talking about here, but a residential quality.

When I look at your findings on Page 8 of your document dealing with Burnt Mill Pond, it says that, "Four surface water samples were collected and analyzed from the Burnt Mill Pond prior to its draining by the City of Vineland. Aluminum, iron, manganese, and vanadium were detected in three of the four surface water samples at concentrations exceeding the SWQS."

It goes on to say in that

particular paragraph that historical and recent remedial investigation shows that it has decreased but it still exceeds the standard that's required.

First question is where can I get copies of these reports?

Not only the historical reports, but the present reports.

MS. HENRY: The reports are in the repository. I forgot to the mention that. They're in the library right next door.

MR. TONETTA: So, all of the reports you mentioned on Page 8 --

MS. HENRY: All the reports are available in the repository.

MR. TONETTA: You go on to say that, "Four sediment samples --" sediment samples, not the water samples -- "(top six inches) were collected from Burnt Mill prior to draining. Chromium, copper, manganese, mercury, and nickel, were detected in all sediment samples collected from the Burnt Mill Pond at concentrations exceeding the ESCs."

You don't mention in here that historical data would show that the concentrations increased as a result of the decrease in the water samples, because, obviously, the water samples as the pond -- I call it a "pond," it's really a lake -- as it was drained, the water receded, and, obviously, the samples or the pollutants then find themselves in the soil.

So, while you mention the historical data shows the water levels of pollutants decreasing, you make no mention with regards to historical data

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of the soil samples.

Do you have that information?

MS. HENRY: Soil samples that were taken?

MR. TONETTA: Historical data of soil samples.

MR. SIVAK: The sediment samples.

MR. TONETTA: Correct.

MR. SIVAK: All of the sampling that we conducted as part of the remedial investigation were included in our evaluation of what the potential human health ecological risks were.

MR. TONETTA: You mentioned the water samples being decreased, but you don't mention whether the soil samples have increased.

Is there a reason why that isn't

mentioned?

MR. SIVAK: I don't know that off the top of my head, how that information was presented or the context of that.

MR. TONETTA: On Page 9 of your report, you talk about human health risk assessment, and it's evaluated to

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potential human health risk to, one, a recreational trespasser.

What is the definition of "recreational trespasser"?

(Laughter)

MR. SIVAK: What we do when we are trying to figure out what types of populations might be exposed, we look at the land use and look at are there residents? Are there commercial industrial workers? Are there utility workers?

When we get into recreational areas, when we get into areas where, for example, it's a commercial area but we have reports or we have visual observation of nonworkers cutting across it, they are trespassing. It's not their land, but we know people are using it.

So, we have to come up with a name

to characterize these type of exposures.
So, we call them trespassers, we call them recreators, and in this particular instance, based on the information that

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we had, we call them recreational trespassers.

MR. TONETTA: So, you consider someone that uses a public park that's funded by the State of New Jersey DEP Green Acres a recreational trespasser?

(Laughter)

MR. TONETTA: I'm not meaning to be funny. I'm trying to figure this out.

It would seem to me if you're describing recreational trespassers, you believe that their use is a lot less than someone who would use it as a recreational user. And if that's the case, then the data that you have utilized to determine the potential human health risk is flawed.

MR. SIVAK: Okay.

MR. TONETTA: So, I would suggest there has to be another definition for people who use a public park, because those people use a public park a lot more than a person who would be considered a trespasser.

MR. SIVAK: Okay.

MR. TONETTA: So, I think it's important that that information be provided and someone give us some information regarding whether a recreational user as in a public park would have the same HHRA as a trespasser.

MR. SIVAK: Sure, we can look at the exposure scenario that was used to characterize the risk to that person.

Typically, when analyzing sediment exposure we do take into account some sort of climatological influence. We recognize that folks aren't really accessing surface water and sediments during winter months, obviously when it's cold. Things like that.

But we can look at what kind of exposure scenario, what type of exposure frequency, was developed for those people who would access Burnt Mill Pond.

MR. TONETTA: Now, the use of Burnt Mill Pond, as DEP is probably aware or should be aware -- and I understand that there's different branches of the DEP and one hand may not know what other is doing.

Again, I'm not meaning to be smart, I mean it because it's true. DEP is such a large group that sometimes one department within the DEP is unaware of what Green Acres might do. And I understand that. It's just a fact of government at this point.

My concern is in a recreational setting such as this -- this park was set aside for fishing, boating, birdwatching, wildlife watching.

What is the consideration of some kid who comes over and catches a bunch of sunnies and wants to eat them?

Has that been considered?

Because, again, the park was set aside by DEP through Green Acres for that purpose. So, I have a concern regarding that.

And, again, a concern regarding -- again, it's my understanding your job is to somewhat coordinate with DEP and

state regulations in the use of this property. So, if the use of this property is, in fact, a public park and both federal regs and state regs require parks to be cleaned to residential standards, how can we possibly deal with the use of this property or the maintenance of this property based upon industrial standards?

This park is also, just so everybody is aware, part of the State of New Jersey Recreation and Open Space Inventory. I think they call it ROSI or whatever acronym.

So, my concern is that we have a park that's recognized by the State of New Jersey as a recreational and open space facility that is heavily contaminated; by your own findings, exceeds all the necessary standards. And I assume that those standards are industrial, not residential. So, I have a concern for that.

And, more importantly, I think this is a good thing that this is coming

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to your attention now, and maybe a lot of this was not aware to you. But you do mention in your report that you recognize that the dam that was building the lake is now in disrepair and needs to be repaired. Well, needless to say, we have almost a million dollars of DEP

money, Green Acres funds, to fix this
dam.
Why before we fix the dam doesn't
somebody recognize the fact that your
study reveals that this property is
contaminated by Shieldalloy and exceeds
the industrial standards, let alone
residential standards, and, before we
fill it in, clean it?
It just doesn't make sense to me
that we know the contaminants come from
Shieldalloy, we know that the
contaminants exceed your requirements,
and, yet, in your report, you failed to
address the cleanup and remediation of
this park.
And we looked at another part when
you talked about the ecological risks.

That's one of the factors that you
consider. And I read on Page 10 dealing
with the Hudson Branch that your intent
is to, "Prevent exposure to contaminated
sediments in the Hudson Branch that pose
an unacceptable ecological risk."
I fail to see how a two-foot
stream has as much ecological risk as a
pond -- a seventeen-acre lake that's
used by birds, fish, deer, other
wildlife. If there's an ecological risk

factor that you need to consider, if you're considering the Hudson Branch, then you need to consider the pond ten times greater.

And, so, I need to have questions answered why you identify a problem in the Burnt Mill Pond, you identify it as a risk factor that exceeds your standards, and you do not identify a remediation process.

MR. SIVAK: So, one of the bases for EPA determining the need to take an action is the triggering of an unacceptable risk, not necessarily the

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exceedance of a surface water standard.

Based on the exposure scenarios that we developed for users of the Burnt Mill Pond, we did not identify an unacceptable risk to the Burnt Mill Pond.

We found the highest levels of sediment contamination up near the SMC facility. They were highest up there. As you move down through the stream system, those concentrations decreased significantly.

So, that is why we believe that, based on all of the samples collected, all of the study that's been done, that by treating the contaminated sediments closest to the facility in the areas that we've identified in the figures and the documents that are in the repository, that that will address the primary issue.

We will continue to monitor the surface water once we excavate those sediments, once we get the source of the surface water contamination -- what we

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believe is the source of the surface water contamination out of there, that the surface water quality will rebound, and then we will be able to achieve the ambient water quality standards that you cited in your comment to us.

You should also please be aware that ambient water quality standards are not based on residential or industrial. It's a generic standard that is based on either the protection of aquatic life or the protection of human health through consumption of fish or fishing, drinking water.

So, they're not necessarily based on an industrial scenario or a recreational scenario like we would if we were evaluating exposures to sediments or to soils or something like that.

MR. TONETTA: Well, I hear what you're saying, but when I look at the nine Superfund evaluation criteria, number two, compliance with applicable or relevant and appropriate

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requirements, evaluates whether the alternatives meet federal and state environmental statutes, regulations, et cetera.

We all know that the state environmental statute requires that a park cleanup be consistent with a residential quality. So, if that's one of your own nine requirements, I'm not sure I understand why that's not being considered.

Number two, I understand what you are telling me about the potential hazard, but, again, I find it flawed because you're basing it upon a recreational trespasser.

I have to believe that you need to go back and take a look at that in terms of the use of Burnt Mill Pond as a complete recreational facility, where over a million dollars will be expended by DEP. And placing this on our Recreational and Open Space Registry, I'd hate to put a skull and crossbones next to that registration. So, I just

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ask that you take a look at that.
MR. SIVAK: Sure, absolutely.
MR. TONETTA: Where did you say we can get those reports?
MS. HENRY: In the library located --
MS. AYALA: Newfield Public Library.
MR. TONETTA: Would you feel that it would be compelling if you found that while the water samples decreased in terms of its pollutants, that the soil and/or sediment pollution increased?
Would that not be compelling?
MR. SIVAK: I would suggest that our evaluation of the trends of those data are incorporated in those reports.
And the conclusion of that evaluation suggested that if we address the sediments, as I said earlier, in the upper reaches of the Burnt Mill -- of the Hudson Branch, excuse me, then the surface water quality throughout will improve.
We can go back and we can

absolutely look at the exposure scenario that was developed for users of the park. Perhaps it may be a better plan to not focus so much on the title of "recreational trespasser." That title was developed based on information we received from the folks we had talked to about what types of people frequented those areas. And, so, based upon that, that's the name we came up.

But I think what's more important is for us to identify and get back to you on the scenario of how many days a year we expect folks to be out there, what kind of activities they participate in, what kinds of exposure they would have, things like that.

Going back to your earlier statement while you're still here, our second criteria, threshold criteria, compliance with ARARs, we do agree state ARARs regarding surface water quality need to be met. We have that in our proposed plan. We have a monitoring to ensure that surface water quality does not pose an unacceptable risk to ecological receptors. So, we do agree with you on that point.

There are no state ARARs for sediments. There are state soil numbers, there are not state sediment numbers that have been promulgated; so, therefore, the evaluation of sediment is done on a risk-based perspective.

Superfund law allows us to look at the sediment contamination and take that contamination through our ecological risk assessment process, which we have done. And those sediment levels that we have seen, the contamination in those sediments, have not resulted in unacceptable ecological risk for sediments in the Burnt Mill Pond area.

MR. TONETTA: Do we not, then -- we do not assess the soils, only the sediment?

MR. SIVAK: If soils were sampled in that area, they were evaluated as soil. But if we have sampled sediments in the pond, we evaluated them as

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sediments.

MR. TONETTA: Would it not be important to know what was in the soil?

MR. SIVAK: If our investigation

did not conclude that there was a transport mechanism from sediments onto the soil, then that would be documented and there would be no investigation.

I have to admit, I didn't prep on that part of it prior to this meeting.

We had gone through that part and we had not identified that there was an acceptable transport mechanism that would bring unacceptable levels to the soils in those areas.

MR. TONETTA: That will be looked into as well?

MR. SIVAK: I can go back and check on that and get back to you on that and find out exactly what we did in that area, but I don't believe that our evaluation included the sediment contamination in the Burnt Mill Pond was so significant that it being mobilized to the soils would result in

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unacceptable human health risk.

MR. TONETTA: One last question.

As you probably are aware, there's another site that the EPA is working on in Vineland, and that's the Pure Earth site. Paul Kahn from your office has been running that facility. And the contaminants -- unfortunately, the Hudson Branch also flows at or across this property.

So, my question is: Has anyone at EPA level determined whether the contaminants found at the Pure Earth site, such as the metals that you're finding there, may have come from Shieldalloy?

MR. SIVAK: We did have conversations with Paul Kahn about that and we have extensively evaluated the groundwater at the site, we've delineated that plume that's memorialized in the OU1 Record of Decision, we've been monitoring that, we've been sampling that, we've been working on pilot studies to try to

enhance that remedy so that it becomes even more effective than we had originally thought.

And our conversations with Paul Kahn, including conversations with our hydrogeologist, have concluded that there's really no connection between the two.

MR. TONETTA: Thank you.

One last thing, if I may.

Obviously, I'm here on behalf of

the administration of the City of Vineland as well as the residents of the City of Vineland. However, we intend upon providing a more thorough and complex written response.

I just wanted to make sure that this isn't cutting us off.

MS. HENRY: No, no, no.

MR. SIVAK: Absolutely not.

You don't get one chance to write a comment. You can write a comment every day if you want.

MR. TONETTA: Very good. Thank you very much.

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MR. SIVAK: You're welcome.

(Applause)

MS. AYALA: We need to take a five-minute break.

(Recess taken)

MR. ALLEN: My name is Mark Allen. I live at 11 Rosemont. I'm here since 2002 and I've got five children. I'm very concerned with the water quality and what's going on with this all these years.

One thing I want to find out about is the public meeting list. I was only notified of this meeting an hour and a half prior to it starting from the township's meeting phone call they sent out. So, I wasn't even aware of this meeting until an hour and a half prior to it starting.

So, I'd like to know when next meeting is so I can be a little more prepared for it.

MS. AYALA: You signed up. Right?

MR. ALLEN: Yes, I did.

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So, I've done that in the past with other meetings, but I don't know if they're quite the same.

MS. AYALA: No.

MR. SIVAK: We haven't had a meeting for this site, certainly like this, in many, many years.

MR. ALLEN: Second, aside from this meeting, is there anything at home we can do as far as a home filtration system that would help us in eliminating some of these contaminants from our water?

MR. SIVAK: First of all, I think it's very important for everybody to know that folks that are on public water here in Newfield, that water is tested. It has to meet all state and federal requirements for the water to be distributed.

There has been some information about some wells that have closed recently, so that should serve as notice that that water is tested regularly.

There are very, very strict

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requirements on public water disinfection and distribution, and all water companies have to meet those standards in order to continue to distribute water.

So, that's the first thing that I wanted everyone to be aware of is any water from the Newfield public water supply -- or whatever it's called, I don't know if that's the official name of it -- but if you're getting water through your public water utility, that water will meet all of the very, very strict and very, very health protective public health standards that have been set forth for drinking water.

Second thing that you all should be aware of in the room is that, as we said before, we've done very, very exhaustive groundwater investigation of this site, and we continue to monitor groundwater in our efforts to constantly improve and make more efficient our groundwater treatment remedy at the site.

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The groundwater that is affected by the SMC site is not affecting the public supply wells that are supplying water to Newfield. We have a very good understanding of what's going on with the groundwater at the site and we can say with very much certainty that it is not affecting the public supply wells.

So, those are two things you need to be aware of as far as our site goes.

As far as your own level of concern about drinking water for your children, I understand that you'll always be concerned about that regardless of what I stand up here and say.

I can't offer you any advice on what to do about that. There are certainly lots of options for home water treatment systems if you don't like the taste of it, if you're uncomfortable with something.

But I can stand here and tell you that our site, the site that we're looking at and the site that we're here to talk about, is not affecting public water supply.

MR. ALLEN: Testing results from the Newfield water department, it talks about all the contaminants. Chromium is mentioned.

MR. SIVAK: Correct.

MR. ALLEN: So, how can it be not the same source?

MR. SIVAK: I have some information for that.

First of all, chromium is a naturally-occurring element. It is found all around the world. Chromium is very prevalent in New Jersey. There's a lot of natural deposits of chromium in New Jersey.

Chromium ore processing historically has been very big industry in New Jersey, typically. It's happening a little bit more here, but chromium is a naturally occurring element.

We've had our hydrogeologist assigned to this project look at interconnectivity between our plume and these wells, and we've determined there really is no influence of our site on those public supply wells.

So, yes, you are correct in that there's chromium at our site and in our supply wells, but all of the information that we have available, all of the reviews that we've gone through, has not identified any connection between our site and public supply wells.

MR. ALLEN: To me, it seems a little odd.

MR. SIVAK: And I understand.

MR. ALLEN: It's still from the ground, same source where the water is from. Whether it's taken from the ground up top or taken from below, to me, it's too much of a relation.

MR. SIVAK: And if I were standing on your side of the microphone and I had my family and I was very concerned about that, I can fully understand what you're saying.

I can only answer and tell you the

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science and the information we have and what our experts are telling us regarding the connectivity between those two. There could be naturally occurring chromium deposits, there could be slightly acidic conditions that are causing it to leach in certain areas. I don't know that.

We're not studying the groundwater in the area near those public supply wells, we're only studying the groundwater that is associated with site-related contamination and if anything migrated into that groundwater. And based on that evaluation, we cannot find a connection between the two.

MR. ALLEN: Alternative 4. For me as well, I prefer 4. That's my standing on that.

Why would the cost be relevant to us?

Because we don't want to hear -- capping it is just a Band-Aid. Removal is the best option.

I can assume that when the zoning

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made it a commercial site, that it was probably for the building of Shieldalloy. Somebody said, "Hey, let's make it commercial," rather than residential because of the intention of the building of the property.

Now that the property is not being

used in that aspect, it should be rezoned, I would assume, and cleaned up to a standard below a commercial level; to a residential or a recreational level.

So, 4 would seem to redeem that back to that lower level, which it should naturally start off at.

MR. SIVAK: I don't mean to interrupt you, but I want to respond to your point while we're still having the conversation.

So, EPA does not get involved in zoning at all. That is now our -- we do not influence the -- we work with communities to find out what their zoning is, what their town master plans are, we work with the property owner who

also has a say-so in what the zoning is and potentially might be in the future, and we look at all of that information.

You should also understand that the difference between Alternative 3 and Alternative 4, again, the only difference between those two alternatives is how facility soils are addressed; one is capping, one is excavation. Even the excavation numbers are based on excavation to a

commercial/industrial soil cleanup
level. It is not excavation to a
residential level.
Am I correct?
MS. HENRY: Yes.
MR. SIVAK: Yes.
So, even if we implement and we
select Alternative 4, that excavation
will only be to a level deemed
protective for commercial/industrial
types of exposure.
MR. ALLEN: All right.
And two more questions. They're
kind of long.

When it comes to the property
itself, the facilities, you said there's
ground contaminants with dust as well.
I've seen myself over there police
department vehicles, I've seen
commercial vehicles that seem to be
subletted there, I've seen numerous
Porta-Potties there, I've seen an RV
camper as if someone is staying there
long term.
These vehicles coming on and off
the property, are they being detoxed or
decontaminated or are they carrying
these materials off the premises?

Can they go in and out without being washed down?

What's the standard now, since it is a cleanup, for these vehicles coming and going on a daily basis?

MR. SIVAK: Great question.

My understanding is that they are not being deconned when they come off the property.

But I don't know that they need to be, so let's go back and look at the

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scenario that was associated with unacceptable health risk for humans. And that was for utility and construction workers in that one area.

So, that looks at exposure to soils at surface and at depth. So, in that area we have some vanadium at depth, and we're looking at these people being exposed to that dust being generated on a very intense basis while they're doing these activities.

I don't know the scenario that we looked at. Other scenarios I've worked on as a human health toxicologist were utility and construction workers. That includes things like every day for two years. So, you're breathing in that dust that we're assuming is being generated every day, eight hours a day, 250 days a year, for two years or one year or three, I'm not quite sure what scenario we looked at.

But the type of exposure is a lot more intense than someone who may come on to the property and be there for a

day or two or a couple of days while doing maybe landscaping activities or they're reading meters or doing other types of activity.

And we are concerned in this area about contamination at the surface but particularly at depth. If you notice, we didn't have unacceptable risk from exposure to only surface soil. We only had unacceptable risk from exposure to surface and subsurface soil.

So, in that particular area, again, there's something in that subsurface, there's vanadium in that subsurface, that when it's in the air -- and vanadium, I believe it's a nervous system toxin. So, when you breathe it in, it's absorbed in very easily and humans are pretty susceptible to that. So, all of those things are why we have a concern of vanadium in that area at surface and at depth.

And when we talked driving in and out, bringing dust and dirt along in the treads of the car or whatever, that's

not of concern to us.

You see the difference in those types of exposure?

MR. ALLEN: Yeah.

You mentioned the health risks and the charts.

Is there anything being followed up as far as the health department saying we have a certain number of cases in Newfield going up and it relates back to, you know -- it's hard to put liability on that extreme, but is there anything being looked at to find out, "Hey, we have six kids now that are sick from this area."

Or what's going on with the health department compared to the EPA involvement in this site and its residents?

MR. SIVAK: That's a great question, and that's a good way to kind of set some more parameters around what EPA's human health risk assessment process does.

The EPA risk assessment process is

not a predictive tool looking at individual cases of or incidences of any disease in a population. It's a tool that we use to determine do we need to take a remedial action at a site?

It does not look at actual statistics of disease in a community. It is a predictive tool that we use to determine the need to take action at a site.

So, what you're asking for is the other thing, which is someone coming in, looking at mortality and morbidity rates from the community of certain diseases and things like that. EPA, by law, does not have the authority to do those types of studies.

Those types of studies are deferred to either the state, state health departments, or to an agency, a sister federal agency that's headquartered in CDC, called the Agency for Toxic Substances and Disease Registry; ATSDR, we call it. One of those two agencies, either the state health department agency or ATSDR.

I don't know if there are folks that are currently working on the site right now. I can go back and I can talk to our folks at ATSDR, because we work with them in our offices as well, and see what kind of information they have as well. And we can have them get back to you about any information they might have. It may be countywide, usually it's ZIP-codewide, but they can look and see what information they might have.

So, see me after the meeting and I'll get your contact information.

MR. ALLEN: Sure.

And I guess question B to that is --

MR. SIVAK: Is there a second question or is it corollary B to your first question?

MR. ALLEN: Well, the thing is when you hear about the health costs and diseases that come around and the levels, I guess my point is that shouldn't it be if you're making these

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risk assessments and judging the cost of Alternative 3 to 4, wouldn't you think the health risk involved, associated with that -- it didn't seem it was on that chart of the health risk that happens during the time of the excavation and whatnot.

MR. SIVAK: So, the health risk assessment, human health risk assessment, as I said, is used as a tool to help EPA determine when you need to take an action. Once that decision is made, then we start looking at what levels do we need to clean up to and what technologies or what engineering controls or institutional controls are at availability to address those unacceptable health risks and allow us to meet our remedial action objectives?

The law says that we have to look at all of the different remedies -- and came up with four of them for this site -- and take them through nine criteria.

Now, short-term implementability

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is one of those issues. When Sherrel was explaining that, she was talking about what short-term implementability means -- it's kind of a weird term, not a very self-descriptive term -- is that when you're implementing the remedy, are you creating -- how big of a problem are

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you creating when you implement a remedy?

For example, when you dig something up, you're creating dust. So, you have to control that dust. How easy is it to control the dust?

When you're shipping stuff off site, you have truck traffic that's coming back and forth through a community. You'll likely be decontaminating a lot of equipment because you are into the area where material is highly contaminated and you want to make sure, as you said earlier, that you're not dragging that material off. You have to decon that, so you're creating waste from that material as well.

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Those are short-term implementability issues that we weigh against other alternatives that we look at.

So, to kind of answer your question in an incredibly long-winded way -- and I apologize, but you've been here long enough to know that that's sort of how I roll -- that is the place where things like the health effects, the potential health implications from the different alternatives, that's where we factor that in.

So, that's one of the reasons why when we look at the nine criteria and came up with the alternatives, why capping this area we felt ranked higher than excavation and offsite disposal; because we felt this was a very small area, 1.3 acres compared to the 67 acres that we've investigated; we felt that based on the contamination that we have, vanadium, it's not migrating to the groundwater, you know, it's only at risk when it gets volatilized and brought

into the air. We want to keep it there.

That's why we felt the capping, with all the other capping that's already in place at the facility, it was in line with the way the facility is currently structured --

MR. ALLEN: Makes sense.

MR. SIVAK: -- it's consistent with the footprint of the facility, it's appropriate for the types of contamination that we have, it reduces the short-term implementability risk by digging it up and taking off site.

And we felt very strongly that's

why capping was the better alternative for the site.

MR. ALLEN: Thanks for your time.

MR. SIVAK: Thank you.

(Applause)

MS. AYALA: Ten?

MR. SIVAK: We're up to ten?

(Laughter)

MR. DEMMY: Jason Demmy, 316 Madison Avenue.

You were talking about the

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capping. I have some questions about the capping.

The green shaded areas, you said that those are already caps in place.

Are those hard surface caps or vegetative caps?

MS. HENRY: Vegetative.

MR. DEMMY: The capping which you'll be putting on, the other gentleman said it would be a one- to two-foot cap.

Would that be an above-grade cap or a surface-level cap?

MS. HENRY: Surface level.

MR. DEMMY: Okay.

And then since it is one point whatever acres, even though it is a 67-acre site, would there be some sort of storm runoff attributed to that or some sort of storm runoff system put in place for the runoff that would be generated by that one point something acres?

MR. SIVAK: We would evaluate the need for that in the remedial design

phase.

MR. DEMMY: Okay.

MR. SIVAK: We would look at -- you know, we said a one- to two-foot cap. We would look more clearly at how much we need to scrape, how much we need to bring it to surface, the need for stormwater runoff controls. All those type of things get incorporated into the design.

MR. DEMMY: I think my main question is just because that is so close to the elephant in the room that we're not supposed to talk about and where would that water be going and, you know...

Okay. Thank you very much.

MR. SIVAK: Thank you.

(Applause)

MS. AYALA: Eleven?

MR. DEMMY: I was eleven.

MS. AYALA: Twelve, thirteen, fourteen, fifteen?

MS. ERICKSON: I'm thirteen, Mia Erickson, 300 Wood Street.

I'm not an expert or anything, but adding to what Jason just asked about the stormwater, it seems as though the decision was already made and there hasn't been --

Can you go back to that slide with the four options?

I just want to get my words right.

MR. SIVAK: That one?

MS. ERICKSON: Yes.

It seems as though the remedial alternatives are not proposed. It seems as though, from everything I've heard so far, that they are decided already and that Alternative 3 isn't actually an "alternative," it's actually the decision.

Is that true?

MR. SIVAK: No.

It is our preferred alternative. No final decision has been made. The final decision will be made when we issue our Record of Decision.

So, we've looked at lots of different alternatives for how to deal

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with the unacceptable risk. That's why we're taking an action here, because we have unacceptable risk.

We've looked at lots of different alternatives for the vanadium and the chromium in the facility soils and for the five metals in the sediments of the Hudson Branch.

Of all the different alternatives that we looked at, we whittled them down. Let's get rid of no action.

We feel that these three alternatives contain the best technical options for us to address those unacceptable risks. That may not be -- one of you sitting in the audience may say, "Did you ever consider this technology? We think that you should consider that."

And that's fine. And as part of our developing a response to that comment, we will go back and we will look at the viability of that additional technology. And maybe that turns out to be the best technology that exists and

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that becomes part of our preferred remedy.

So, of these four alternatives, we've taken these through the nine criteria -- Sherrel talked through them and I gave them in probably more excruciating detail than you could ever hope to deal with -- about why we think capping is the better alternative for the facility soils and why we think the excavating and offsite disposal of the contaminated sediment from the Hudson Branch is a better alternative as well.

If you all tell us that you think some other alternative is better and you give us your reasons why, as we deliberate through that we may change our preferred alternative. It has happened in the past that we have changed our preferred alternative to something else based on community input, based on state input, based on information that we gather as part of this process.

So, your information, your

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comments, are very, very valuable to us.

MS. ERICKSON: With that being said, as I suggested, Jason mentioned the cap and stormwater runoff.

Wouldn't an acre -- 1.34 acres of capping cause a significant amount of stormwater runoff that would actually potentially take some of the less concentrated contaminants from the other areas that are under soft capping, run it into the area of the Hudson Branch that is going to be excavated, which will undo all of the excavation efforts and possibly cost the $11 million originally anyway?

So, cleaning it instead of capping it and causing a runoff and actually wash it further down I would say would make a lot more sense than just redirecting it from Shieldalloy down to Vineland, "Let Vineland do it."

MR. SIVAK: Okay. Thank you.

MS. ERICKSON: Regarding that also, I know we're here to discuss the Hudson Branch only, but we can't discuss

the Hudson Branch issues if we don't discuss the originating facility of where the contaminants are coming from.

I, personally, and my husband think that Alternative 4 would be the wisest, most economical, and most healthful decision in this process.

MR. SIVAK: Thank you.
MS. ERICKSON: We also know many people who have died from complications of Alzheimer's in my immediate neighborhood. I don't know about the rest of town, but in my immediate neighborhood, which is just about two blocks, many people have died from complications of Alzheimer's.
My very close neighbor just died from cancer. I know other people in my immediate two-block area that have had cancer and died.
I can't imagine how you're redirecting that other guy to CDC and saying that health issues are not your concern. I mean, if health issues are not a concern, we wouldn't even be here.

And there's residents that are surrounding this one site that need to continue to live here.
MR. SIVAK: Let me touch on that because we do care about -- obviously, we care about the health of the community and we care about the people who live here.
What I was trying to differentiate was the expertise that EPA has versus the expertise that other agencies have

to address some of the concerns that have been raised to us. EPA, we are not a medical agency. We do not have physicians. I am not a physician. We cannot diagnose anything.

The risk assessment tool is not specific enough to look at individual health disease rates in different people and try to figure out: Is the presence of this disease associated with some exposure that may have occurred in the past?

The purpose of the human health is to determine, to answer the question:

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What are the potential health risks, these cancer risks or these noncancer health risks, now and in the future if no action is taken?

So, starting now, at day one -- and you may agree or disagree with this, but this is what this tool is designed to do -- what are the risks now and in the future if no action is taken if people continue to be exposed to the contamination that we just spent all this time collecting?

And if those risks, if the potential for developing some health effect exceeds what Congress has said is acceptable, then we clean up the site.

So, the concern, the very valid concern, "We believe that there are higher disease rates in our community because of where we live relative to this contamination," we do not have the expertise to answer that question.

Other people do. People at the state Department of Health, people at our sister agency through CDC at ATSDR

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have that expertise. And we can put you in touch with those folks to try to figure out how to get answers to those questions.

Does that kind of differentiate it a little bit more?

MS. ERICKSON: Yes.

And I don't mean to oppose you, but I totally disagree.

No one has never knocked on any of our doors and asked us if we're ill or asked if a family member has/had A, B, C different health issues.

Nobody cares. We're just people who live here. And there's risks, but nobody is checking on us, the residents, to see if those risks are actually coming to exist in living people who are dying and filling our cemetery.

MR. SIVAK: What I will do, I will take your information as well when we're done and I will have some folks call you, and you can talk to them about what resources are available, who you can talk to to try to get some answers to

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those types of questions.

I just can't answer those questions.

MS. ERICKSON: Will they be in touch with you all -- not you, personally, but the team --

MR. SIVAK: Yes.

MS. ERICKSON: -- and let you know that there are people dying and they're sick and they're having to pay $11 million to get people well or live through it for years and years and still die?

MR. SIVAK: The folks at our office will then -- once we give them your information, they will be in touch with Sherrel, and she will talk to them about kind of about what happened tonight and what your concerns are and what your concerns are, and there will be some follow-up conversation.

So, they will know from Sherrel what the history of the site is, they will talk to you about what your concerns are, and then we can figure out

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kind of a plan on how to get back with you and get you some more additional information.

MS. ERICKSON: Okay.

MR. SIVAK: In addition, the folks at the federal level will likely also be in contact with folks at the state level.

I keep pointing to Donna. It's not her agency. It's her state, but it's not her agency.

(Laughter)

MR. SIVAK: But she knows these folks, she works with them a lot, and she will be in touch with those guys as well. So, hopefully, we can come up with a little two-pronged approach to help you guys get some answers to your questions.

MS. ERICKSON: You know, I do see the point in capping it so that the dust isn't in the air. But the dust is in the air every time it rains, every time there's a windstorm.

Two years ago, Newfield was hit

with a derecho, and all that dust came
all over town and nobody even asked us
if we'd gotten sick.
So, thank you very much.
MR. SIVAK: Thank you.
(Applause)
MR. SIVAK: 47? 48?
(Laughter)
MS. AYALA: 14, 15, 16?
MR. FIOCCHI: My name is Butch Fiocchi. I live on Burnt Mill Pond.
I would like to see it cleaned so that it also enhances the properties in the whole area. It used to be a recreational, little fishing area for kids. No longer exists.
I understand we're getting the dam done, which is appreciated, but we still feel that the dredging needs to be done. I understand there's other projects, but maybe if we went with the $11 million there might be something in there that we could do with the pond because the water is still going to dump into there.
So, that's a concern.

MR. SIVAK: Okay.
MR. FIOCCHI: The other thing is the area you're going to cap, is there a buffer around that area?
MR. SIVAK: Yes.
The final area will be worked out in this remedial design phase and it will include an area that contains some sort of buffer as well.
MR. FIOCCHI: So, it would be more than an acre?
MR. SIVAK: We're right now estimating it at 1.3 acres.
MR. FIOCCHI: With the buffer?
MR. SIVAK: I don't know the details to that.
MR. FIOCCHI: Okay.
MR. SIVAK: Again, a lot of the specific details, like how far out will it go, will it go forty feet beyond that, that will all be worked out in our design phase.
We'll go back and collect some additional samples in that area and kind of refine it a little bit more.

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MR. FIOCCHI: That hasn't been done yet?
MR. SIVAK: We've collected some data and we identified that area based

on the data that exists. We'll go in and we'll really refine that area to make sure that we're getting everything that we need to cover under a cap, if, again, that cap is the final remedy for the site.

MR. FIOCCHI: The other thing is that will probably use more of the area. Then you're going to need ways in and out which will take more of it away also.

Correct?

It's going to add to the usage or nonusage of what you can use.

MR. SIVAK: Well, the implementation of the cap, once the cap is on there, I'm not quite sure what you mean "ways in and out."

MR. FIOCCHI: Somebody has to get to it.

MR. SIVAK: Right. They could

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walk there, I mean...

MR. FIOCCHI: Right.

But they're still not going to be able to use it or put buildings on it or anything.

Am I correct?

MR. SIVAK: They may be able to

put buildings on it.

Again, the only thing we're trying to do is stop direct contact with this material.

MR. FIOCCHI: Okay.

MR. SIVAK: So, there's a lot of different caps that we can develop that would allow us to achieve that goal.

MR. FIOCCHI: Now, you said it could be used for industrial uses.

MR. SIVAK: Yes.

MR. FIOCCHI: Are they going to be limited?

Like, are you going to be allowed to have food processes on there, anything to do with food?

MR. SIVAK: Again, we do not prescribe how a property can be used.

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We deliver it as a categorical land use.

MR. FIOCCHI: That's local zoning?

MR. SIVAK: That's up to the property owner and the municipality and other interested parties to figure that out.

MR. FIOCCHI: Okay. That's it. Thank you. I appreciate it.

(Applause)

MS. AYALA: Seventeen?

MR. NESSEL: My name is John

Nessel. I live at 108 Woodlawn Avenue in Newfield.

Some of the things that concern me is the fact that any action taken by the EPA, would that affect any future court decisions down the road that may be addressed with the DEP and/or the NRC in other areas at that site?

For example, if you give them permission to cap this, will they be able to cap other areas based on this decision?

MR. SIVAK: I cannot speak for the courts, but I do know that EPA has

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selected capping remedies all throughout New Jersey, all throughout Region 2, and throughout the country. So, selecting a cap at this site is not inconsistent with other remedies we've selected.

I don't think it would influence the courts, but --

MR. NESSEL: But in this case, there's two contaminated areas on the same property.

Will one influence the other? is my question.

MR. SIVAK: They're two very different --

MR. NESSEL: I guess it's more a statement than a question, because how could you answer that question?

Number two and three, in my opinion, are out of the question.

Number four would be the way to go in the sense that Newfield, 1.7 square miles, needs ratables. And the best ratable we can receive is a light manufacturing.

It does need any schools, any

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school tax, it doesn't present any tuition, I should say, or anything else for that matter that would be very, very costly to us people.

In my perfect little world, that site becoming an industrial park would be fantastic. It has two rail spurs, access to two streets, it has a water tower that's better than the Borough of Newfield's water system, quite frankly. So, that wouldn't hurt us at all. That would be the way to go.

And I wish you would consider -- at one time, you stated that you can -- correct me if I'm wrong -- you can make Shieldalloy -- hold on.

Can you order Shieldalloy to enact Alternative 4?

Is it within your power to do that?

MR. SIVAK: The remedy that we select in our Record of Decision is the final remedy for the site.

MR. NESSEL: And that hasn't been done, as you said.

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MR. SIVAK: No.

That will not be done until the public comment period closes, we review all the comments that we received both from the community, from the elected officials, from the state.

And then we memorialize all of that information into the final Record of Decision. We will then engage in negotiations with the responsible party. If they choose to not engage in those negotiations, then we do have enforcement tools at our authority where we can order them to do the work.

But we don't think it will come to that.

MR. NESSEL: So, Alternative 4 isn't out of the question, then.

MR. SIVAK: It is not out of the question, and that's why we're presenting it to you. We think it's an option.

MR. NESSEL: I'm just covering territory to reinforce my position, that's all.

You have to understand that area, depending where it's located in that site, if nothing can be done there -- and I'm being told that it can -- if that can't be used for anything, it might raise a problem with regard to the whole site, you know?

Once again, light manufacturing is the best ratable that the town could have. We really have none now. Our master plan has changed and we really have none, so it's in our best interest.

It was nice to see Vineland here this evening represented by their Solicitor. That was a class act. It's too bad that the Newfield mayor and council didn't have the decency to show up this evening and voice an opinion as far as this is concerned.

MR. SIENCZENKO: That's terrible.

MR. NESSEL: I think it's very disappointing myself.

I think that Vineland being here -- Franklin Township, next time around, if you would be kind enough to

do that, notify them directly and let
them know because it affects their --
Franklin Township is all around
Newfield. And Vineland I think is
adjacent to Shieldalloy, so to speak, so
that would be a good thing to do.

You mentioned historical value.
What you said is it was a glass
producing/manufacturing company back in
the 1900s.

Can we tap into the fact of
possible historical value to have this
place cleaned up?

Do you understand my position?

Is that possible?

Does it have any historical value?

Has anybody looked into that?

MS. GAFFIGAN: A cultural resource
evaluation was done many years ago, and
it was determined not to be of
exceptional historic value.

MR. NESSEL: That's fine.

Thank you very much.

MR. SIVAK: But it's still
special.

(Laughter and applause)
MR. NESSEL: Health issues. In '84, when they turned around and deemed the water down to us in Burnt Mill to be contaminated, my question was, "How come the farmers can use it to water their crops with and make it airborne and then sell the crops?
And everybody said, "Well, it's okay, it's all right, it doesn't matter.
Sure enough, in the '90s, I understand, someone said, "You know what? You can't water no more with that water."
At that time also, old-timers in Newfield realized how many people had cancer; bladder cancer especially.
Talked to the DEP officials at the time, and they were going to do a cancer cluster study. It never came to fruition. Why it never happened, I don't know. It may be too late for that now because most of the people have died, I'm sorry to say.
But we really need to take a look

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at that just to appease those people who think that they're getting cancer from that, which is not necessarily so. But perhaps we can do something with DEP and

do a cancer cluster study.
MS. GAFFIGAN: Department of Health.
MR. NESSEL: I know from doctors that there's a map of all cancer-related illnesses in the Borough of Newfield. I don't have access to that. I don't even know how to begin to get access to that.
It's something we can do to alleviate some people's concerns, but, more importantly, to make sure no one else gets sick.
Thank you very much.
MR. SIVAK: Thank you.
(Applause)
MS. LISI: I think I'm the last one, eighteen.
My name is Ellen Lisi. I have two properties; 36 Southwest Boulevard, across the street from Shieldalloy, and I also live at the Burnt Mill Pond. So,

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I'm double impacted.
I'm sort of a philosopher and I want to give a different perspective.
Anything south of Trenton is South Jersey, and we are agricultural. And our industry is farms. We're agricultural. So, our biggest resource

is the earth and the water.
Earth and water is Alternative 4 because any other option still jeopardizes earth and water.
And there is no industry -- the only industry we've had here in this area is glass and chickens. And glass was because of the sand and the woods to accommodate, and the chickens is farming.
And the closest industry, you have to go to Cherry Hill, Voorhees, Route 73, and further north. If you go further south, we are heritage farms. You can't change the farmland.
So, that's why I say if we're going to do anything -- this area has never changed. I've been here for over

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fifty years. My Newfield property has been in the Lisi family since 1920. That house that I own was built in 1883. Newfield was made a borough in 1863. So, my house is one of the original houses in Newfield.
And the land around was farm. And I remember a field of spinach being decimated by the Shieldalloy factory overnight because they would --
MR. SIENCZENKO: Release the

steam.

MS. LISI: -- do the furnaces at night. And in the morning, I was going to pick the spinach, and it was ruined. So, I know firsthand about that earth and water is the only resource.

Thank you.

(Applause)

MS. AYALA: Any more questions? Comments?

MS. PALADINO: Can I do a follow-up question?

Is that okay?

Linda Paladino, 205 Fawn Drive. I

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just have a follow-up question.

The Superfund, that is federally funded.

Am I correct on that?

MR. SIVAK: Yes.

MS. PALADINO: I've been sitting all night listening to very astute comments, and the $6 million is really bothering me.

The alternative between three and four, and please excuse my vernacular, but it's almost like a no-brainer. I mean, $6 million is a tremendous amount of money, but in government terms it's

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like no money. And to have some kind of better guarantee, if there is any guarantee -- maybe that's a poor choice of words -- for future contamination, as someone said from a runoff, or anything else in the future, it's almost inconceivable to me that we would not do that for $6 million.

I'm just going to close in kind of a humorous -- if you can call this humorous, but in the age of internet, I

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was sitting here and, just for curiosity's sake, googled congressional expenditures. I know you guys fight for your money, and I'm not accusing you of anything here.

But just to let you know, based on 2010 figures, just senators -- not congressman, not legislators, state legislators, this is federal -- get a mailing expense in the budget of $368,000; a recording balance to videotape something of one million nine hundred and fifty-four dollars seven hundred and seventy-one cents (sic); stationery -- I guess this has their letterhead on it -- one million seventy-eight dollars four hundred sixty-five cents (sic).

Again, in all, personal office expenses of $422 million. If our government would use less paperclips, we could go for Alternative 4.

(Applause)

MS. AYALA: Any more questions or comments?

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MR. PRICE: Robert Price, 123 Fawn Drive in Newfield.

Quick question. Even if we do Alternative 3 and they start in the middle, start at the farm -- not the pond, they start at the farm -- what happens to that when there's groundwater at the Shieldalloy facility leaching back in underneath to the cap, the Hudson Branch or the Cohansey aquifer underneath?

They start working at this site, why not start the problem and work our way to solving it?

MR. SIVAK: As I understand your question, it's how are we going to phase in the remediation of the Hudson Branch.

MR. PRICE: Yes.

MR. SIVAK: Again, how we would implement that remedy would be worked into our design, but I think what you said is exactly what we would consider; to start at the upgradient portion of the site and then work our way down so we don't end up with recontamination.

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We want to do it as efficiently as possible and we don't want to recontaminate anything.

MR. PRICE: The facility itself, we're not talking about that today. Can't talk about that.

MR. SIVAK: Well, we can talk about the facility, we just can't talk about the slag pile, because we have onsite facility soils that we're dealing with as part of this remedy.

MR. PRICE: Isn't the groundwater affecting the aquifer which is going down through the Hudson Branch?

MR. SIVAK: We already have a remedy for the groundwater. That was selected in the '90s; '96. That's the groundwater pump and treat. We're pumping the groundwater out and we're trying to get the contamination out of it.

In addition to that, we're also doing some pilot studies to try to get the contamination out more quickly and more efficiently. So, we're already dealing with the groundwater.

So, we've captured the groundwater. The groundwater is not migrating anywhere.

MR. PRICE: Similar to what you guys did in Vineland and Price's Pit down in Pleasantville?

MR. SIVAK: I don't know Price's Pit, but I do know Vineland. Yes, I work on that site as well.

MR. PRICE: It's another dumpsite.

My fear is contamination. If we do the work on the farm, and, as one man said, if we don't do anything down Burnt Mill, hopefully we do, that's the end of the line so far, and nothing further, hopefully, has gone passed, but if you start one end and work your way to the other --

MR. SIVAK: We would start at the area most upgradient and work our way down.

We have a lot of experience in dealing with sediment sites in our region, and then we tend to start at the area where the source is and work our way down for the exact reasons you mentioned.

MR. PRICE: The other thing is with groundwater, we don't know, one day the water level might be 100 feet down, next month it might be 130 feet down.

When the groundwater -- like, when the salt comes up in the back of the bay and you get groundwater contamination with the salt in the back bay into the fresh water, the brackish water, similar to chromium and everything that might be in the groundwater, will that migrate back?

MR. SIVAK: We right now know where the groundwater contamination is and we're controlling it, we're containing it.

Even though groundwater fluctuates -- groundwater levels can change based on precipitation events, storms, whatever it might be -- we monitor that all the time. So, we're very confident that we're not going to

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have groundwater that escapes and that recontaminates something.

We're very confident in our groundwater efforts.

MR. PRICE: Similar to -- it's less than half-mile to our two wells?
MR. SIVAK: It's about a mile and a half to the two wells, and they're upgradient.
MR. PRICE: By the way the crow flies or by the way of the river?
MR. SIVAK: By the way the crow flies.
MR. PRICE: Across the pond.
MR. SIVAK: Our estimate of the two wells that have been closed, is that what you mean?
MR. PRICE: No.
MS. GAFFIGAN: It's about a half-mile.
MR. SIVAK: Oh, those wells. I'm sorry, I thought you meant the wells that were closed. I apologize.
MR. PRICE: I think Option 4 is what we need to do, but I think we need

to start at the source.
MR. SIVAK: Okay.
MR. PRICE: Thank you.
MR. SIVAK: Thank you.
MR. FIOCCHI: One quick question.
Between the $5 million and the $11 million, who regulates that?

It might have been asked before.
Are you telling them what to do or they're choosing what course to take?
MR. SIVAK: EPA selects the remedy. We will then work with the responsible party to implement the remedy. And if they choose to do that, it will be implemented under our oversight.
MR. FIOCCHI: Okay.
MR. SIVAK: We will always be the final decision maker.
MR. FIOCCHI: Okay. Thank you all for coming down. I appreciate it.
(Applause)
MR. SIVAK: 111?
(Laughter)

MS. AYALA: If there are no more questions, I want to thank everybody for coming out tonight.
And I want to apologize for all the mix-ups. But we had the meeting, and we promise that going forward things will be different and more organized.
And you have until July 28 to submit comments to Sherrel. Fax them, e-mail them, or just send them via the post office.

Thank you so much.

(Time noted: 10:07 p.m.)

♀

C E R T I F I C A T E

STATE OF NEW JERSEY)

) ss.

COUNTY OF HUDSON)

I, LINDA A. MARINO, RPR, CCR, a Shorthand (Stenotype) Reporter and Notary Public of the State of New Jersey, do hereby certify that the foregoing transcription of the meeting held at the time and place aforesaid is a true and correct transcription of my shorthand notes.

I further certify that I am

neither counsel for nor related to any party to said matter, nor in any way interested in the result or outcome thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this 16th day of July, 2014.

LINDA A. MARINO, RPR, CCR

♀

RESPONSIVENESS SUMMARY

APPENDIX V-b

LETTERS AND E-MAIL SUBMITTED

Joyce & Dennis Costandino
107 Woodlawn Ave.
Newfield, N.J. 08344

July 17, 2014

Sherrel Henry, Remedial Project Manager
U.S. Environmental Protection Agency
290 Broadway 20th Floor
New York, N.Y. 10007

Dear Ms. Henry,

In regards to the clean-up of Shieldalloy Metallurgical Corp, Dennis and I would think that anyone, let alone a corporation, would be responsiable to clean up their own mess. To think that Shieldalloy could leave health hazard materials for the citizens of Newfield is incomprehensiable!

That it has taken years for this matter to be taken care of at the expense of the health of real people is beyond words.

There is no other alternative than to do what is right and have the problem finally fixed by Shieldalloy Metallurgical Corp. by implementing alternative #4 (Excavating Sediments and Institutional Control applied.

Your action on this matter is greatly appreciated!

Sincerely,

Joyce Costandini

Dennis A Costandino SR

BOARD OF
CHOSEN FREEHOLDERS

COUNTY OF GLOUCESTER
STATE OF NEW JERSEY

FREEHOLDER DIRECTOR
Robert M. Damminger

2 South Broad Street
PO Box 337
Woodbury, NJ 08096

Phone 856.853.3395
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www.gloucestercountynj.gov

New Jersey Relay Service-711

CLOSE TO EVERYTHING
Gloucester County
FAR FROM IT ALL

July 18, 2014

Sherrel Henry, Remedial Project Manager
USEPA
290 Broadway
20th Floor
New York, New York 10007

Dear Ms. Henry:

The Gloucester County Board of Chosen Freeholders has received a copy of the Superfund Proposed Plan for Operable Unit Two (OU2) at the Shieldalloy Metallurgical Corporation Superfund Site which is located in the Borough of Newfield, Gloucester County. Also, several of our staff members attended the USEPA Public Meeting on the Proposed Plan which was held in Newfield on July 9, 2014.

Based on staff's review of the Superfund Proposed Plan for the site, the Gloucester County Board of Chosen Freeholders submit the following comments:

1. After developing and screening four remedial alternatives for the facility, USEPA has identified Alternative 3 (Capping Facility Soils, Excavating Sediments, and Institutional Controls) as the Preferred Alternative.

   Capping facility soils and excavated contaminated sediments from Hudson Branch is unacceptable. The Gloucester County Board of Chosen Freeholders request that all contaminated materials (soils, sediments, slag, dusts, building materials) from the site are removed and transported to an NJDEP approved offsite disposal facility.

2. The report should include a description of the stream gaging program on Hudson Branch and a discussion on the interaction between the aquifer and the stream.

3. The report should include a description of the pilot studies that are currently underway concerning groundwater contamination remediation at the site.

4. The report should include a discussion about the monitoring program for the wetlands along the Hudson Branch.

5. The report should include a discussion concerning sampling results and flow from the two outfalls. The report should also include a map of the

facility's storm system. USEPA should also review the stormwater systems of new developments which are to be constructed along Catawba Avenue.

6. USEPA should sample stormwater runoff from the slag pile and evaluate potential impacts to soils, wetlands, sediments, and Hudson Branch.

7. The report should include a chart of surface water, soils, and sediments sampling results. This section should also include a discussion on the QA-QC Plan for the project and who is responsible for conducting the monitoring programs. A map of all sampling locations should be included.

8. As the facility has been in Newfield for many years, the Human Health Risk Assessment should also include an evaluation of human health risks to the Borough residents and other receptors.

9. USEPA should clarify NJDEP's position on the Preferred Alternative. The report states that NJDEP is evaluating the preferred alternative and then states that NJDEP believes that the alternative will be protective of human health and the environment.

10. The document should include a discussion concerning the Company's commitment to funding the cleanup at the facility and whether they have the financial resources available to remediate the site.

11. The document should discuss the availability of Superfund funds for the project.

12. The Proposed Plan should discuss permits that will be needed for the project (i.e. NJDEP, Gloucester County Soil Conservation District).

13. The Gloucester County Board of Chosen Freeholders formally request to be kept informed of current and future USEPA and NJDEP activities and studies at the site for OU1, OU2, OU3 and the slag pile.

Once again, the USEPA Proposed Plan to cap facility soils and excavated sediments at the Shieldalloy Metallurgical Corporation Superfund Site is unacceptable to the Gloucester County Board of Chosen Freeholders and our residents. We urge USEPA and NJDEP to remediate the site in a manner that will insure the safety and well-being of our residents and also protect the environment.

The County of Gloucester appreciates the opportunity to participate in this process. Please feel free to contact me if there are any questions or comments.

Sincerely,

Robert M. Damminger, Director
Board of Chosen Freeholders

c. Heather Simmons, Freeholder Liaison
Chad M. Bruner, County Administrator
Gerald A. White, Deputy County Administrator

The Green Action Alliance

Green Solutions for America's Pollution

www.greenactionalliance.com

July 24, 2014

Sherrel Henry .... Remedial Project Manager
U.S. Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007

PUBLIC COMMENT ON THE REMEDIAL ACTIONS FOR THE SHIELDALLOY METALLURGICAL CORPORATION SUPERFUND SITE IN NEWFIELD, GLOUCESTER COUNTY, NEW JERSEY

Dear Ms. Henry,

I am writing in reference to the Shieldalloy Metallurgical Corp., Superfund Site (OU2) in Newfield, Gloucester County, New Jersey. The purpose of my letter is to object to the current plans labeled as Alternate 3 which is the focus on capping facility soils, excavating sediments and institutional controls. This plan represents placing a Band-Aid on a dirty/infected cut and is an unaccepted method to the people of Newfield, the residents of both Gloucester and Cumberland Counties and a concern for residents throughout Southern New Jersey who may have been impacted by the Groundwater contamination for decades without their knowledge and possible health and safety risk to tens of thousands of New Jersey residents. Clearly this Superfund site has been a contamination source prior to the discovery of contamination emanating from this site and that contamination may have drifted far beyond the Gloucester and Cumberland county areas.

It appears that both the U.S. EPA and NJ Department of Environmental Protection have used dollars and cents to base the focus on Band-Aid repairs to contaminated sites. The " Cap and basically Forget" method is all too common as a solution to pollution and poses present and future risk to local residents. Monitoring of these sites are no answer to fully cleaning the site completely. The people of Newfield and both Gloucester and Camden Counties as well as all of South Jersey deserve better. When I say better it means the proper actions in fully cleaning up the site not catering to the polluter but providing the residents a solution that will not have them and their family members concerned about the ongoing contamination issues that may affect their lives. Your Human Exposure Assessment Risk I find plain and simple just sheer nonsense. In my 34 years in the environmental field I have seen issues where there were a number of environmental coverups and the conspiracies to cover up contamination issues by building owners as well as government agencies who are suppose to help protect the general public have been reported yet somehow are buried on someones' desk or totally disregarded which seems to me to show that your agency and the NJ DEP may play favorites as to who they target and what plan of action is provided. I am concern that you are bending over backwards for the Shieldalloy Metallurgical Corp. at the expense of the health and safety of the residents of Newfield and surrounding areas.

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The Green Action Alliance
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The fact that the Shieldalloy Site is on the Superfund List in itself indicates a risk factor to the Newfield residents and others beyond the Newfield area. The recent meeting in Newfield by the U.S. EPA and the NJ DEP appeared to me to be a side show filled with misleading statistical information and catering only to Alternative #3 the capping process. The statements made by the U.S. EPA as to seeking solution to reduce the risk to area residents is completely irresponsible and concerning. The statement that needs to be made is to eliminate the risk to area residents not reduce the risk. These residents have been contaminated upon for quite sometime and now is not the time to focus on the capping process to continue the health concerns. While the proper cleanup of the contaminated soils may be almost twice the cost of a flimsy style capping method, eliminating a source of decades of contamination is necessary at this point.

The capping process involves a 1.3 acre site on the Shieldalloy property which would be used to prevent direct contact with vanadium/chromium contaminated soils which appear to be currently an issue. The fact that as of this writing you are not sure of the type of capping material to be used or its design classification indicates that this method/alternative is a thrown together method to try and convince the residents in order to save money and assist Shieldalloy Corp. You also admit that this capping process would result in contaminants remaining above levels that allow for unrestricted use and unlimited exposure which would involve a review of site conditions to be conducted at least every five years. This shows that a capping alternative (#3) would still pose many concerns and questions not to mention probable ongoing health and environmental risk.

When I began developing a timeline of events regarding the Shieldalloy site and contamination issues it clearly defines the need to not only expedite the process involved with the superfund sites but to also provide a sound rational plan to clean up these sites not Band-Aid over them. It is a concern with the capping process to expend millions to develop, investigate and decades later have a hearing to tell the general public your solutions in a manner that still leave these sites a risk to the general population.

Would your agency at the U.S. EPA and the NJ DEP state on their respective letterheads that the capping process is a 100% safe method that will provide unlimited use of the ground, not affect air or water contamination and not result in stormwater runoff concerns? If not, then the only fair, honest and responsible action that must be taken is to select Alternative #4. Forty four years plus of contamination at Shieldalloy deserves more of a proper response then an out of site out of mind type of capping process. This type of capping solution is never a good alternative and hurts the real estate values of Newfield residents and basically gives the small community a setback to grow when such a large parcel of contaminated land which contaminated far from its property lines is allowed to bury its contaminants on site with the help of both the U.S. EPA and the NJ DEP. Would small businesses receive the same help?

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The capping process in Alternative #3 appears like a sideshow magical act ... Now you see the contaminants - now you don't see them. Unfortunately these contaminants are still there and still pose a threat to the air and water and potentially to the residents. We must stop trying to fit square blocks into round holes by forcing residents to accept misleading and risky solutions to their families. FORTY FOUR YEARS (44) of known contamination to the Newfield residents and beyond is far too long to have a one to two foot capping method to hide further contamination risk. While the general workforce may face various job hazards is it fair to exposure children to known environmental hazards?

The extent of the total contamination issues at Shieldalloy site clearly show a need for cleaning up the contamination so that it does not have the potential to continue to be a risk factor. I would hope that your decision would closely consider the children of Newfield and the surrounding areas. It is not fair to them that they suffer health concerns or risk due to just burying the contamination deeper into the ground especially since a capping process has environmental and health risk associated with it.

Thank you for taking the time to address the issues and I hope you arrive at the only solution for this pollution and that is to remove it not allow it to continue underground.

Sincerely,

Edward J. Knorr

Edward J. Knorr **IH, CES, CMI**
Chairman

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July 28, 2014

Via E-Mail

Ms. Sherrel Henry
Remedial Project Manager
Emergency and Remedial Response Division
US Environmental Protection Agency, Region 2
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: TRC Environmental Corporation Comments on the OU2 Proposed Remedial Plan for the Shieldalloy Metallurgical Corporation Superfund Site

Dear Ms. Henry:

TRC Environmental Corporation ("TRC") welcomes the opportunity to submit these comments to the June 2014 Proposed Remedial Plan ("Proposed Plan") of the U.S. Environmental Protection Agency ("EPA" or "Agency") for Operable Unit 2 ("OU2") at the Shieldalloy Metallurgical Superfund ("SMC") Site in Newfield, New Jersey (the "Site"). As the party preparing the Remedial Investigation/Feasibility Study ("RI/FS") for the Site, TRC has a comprehensive and highly informed understanding of Site conditions and the OU2 remedial alternatives under consideration by EPA.

TRC has carefully evaluated the Proposed Plan and the rationale set forth in it for EPA's proposed "Preferred Alternative" (Alternative 3), which consists of excavation and offsite disposal of Hudson Branch sediments to prescribed depths in excess of the Preliminary Remediation Goals ("PRGs"), and capping of 1.3 acres containing residual metals contamination in the Eastern Storage Area at the SMC Facility.

For the reasons addressed in these comments, selection of remedial Alternative 3 is consistent with the National Contingency Plan ("NCP") under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA" or "Superfund"), is consistent with EPA policy and precedent throughout Region 2 and across the country, and, as discussed in detail in the FS and further below, Alternative 3 is that alternative which best balances the remedy selection criteria EPA is required to weigh under the NCP.

SUMMARY

Selection of Alternative 3 is consistent with the NCP and EPA CERCLA policy and precedent, for at least the following reasons:

1. Alternative 3 best meets the requirements of the NCP remedy selection criteria that must be weighed and balanced as a whole to identify a final remedy for the Site;

2. Alternative 3 is protective of human health and the environment, and is more favorable relative to the short term effectiveness criterion;

3. Alternative 3 is a more "cost-effective" remedy as required by and defined in the NCP and relevant EPA guidance;

4. Alternative 3 is a "greener" remedial alternative when compared to Alternative 4;

5. Public sentiment identifying Alternative 4 as a preferred remedy are due to putative concerns about residually contaminated radioactive slag which cannot properly be considered here, and is at odds with longstanding EPA CERCLA Policy;

6. There is no ARAR for sediment and therefore EPA applied the appropriate PRGs; further, NJDEP regulations expressly allow for the application of site specific cleanup criteria to the areas at issue; and

7. Consideration of dredging of Burnt Mill Pond outside and beyond properly established PRGs, as part of the OU2 cleanup is inconsistent with CERCLA and the NCP.

For any and all of these reasons, EPA is correct in selecting Alternative 3 as the Preferred Alternative for OU2 and the final remedy for the Site.

DISCUSSION

1. The Required Balancing of the NCP Remedy Selection Criteria Demonstrates That Selection of Alternative 3 is Consistent with the NCP and a Decision Otherwise Would be Arbitrary and Capricious

As EPA is aware, the NCP dictates an analysis of remedial alternatives under consideration that "consists of an assessment of individual alternatives against each of nine evaluation criteria and *a comparative analysis that focuses upon the relative performance of each alternative against those criteria*." 40 C.F.R. § 300.430(e)(9)(ii) (emphasis supplied). These nine criteria are:

(i) two "threshold" criteria (overall protection of human health and the environment, and compliance with Applicable or Relevant and Appropriate Requirements

"ARARs") which each alternative must be evaluated against in order to be eligible for selection;

(ii) five "primary balancing" criteria (long-term effectiveness and permanence; reduction of toxicity, mobility, or volume; short-term effectiveness; implementability; and cost); and

(iii) two "modifying" criteria (state and community acceptance) that are to be considered in final selection of the remedy. These criteria are considered after the public comment period. TRC reserves the right to offer further comment, after the comment period, relative to these two criteria.

Id. at § 300.430(f)(1)(i).

All the above criteria "are used to select a remedy." *Id*. See also *id*. at § 300.430(f)(ii). EPA is required to select the "*most appropriate* remedial action" for a site by "identify[ing] the alternative that *best meets the requirements in* § 300.430(f)(1)(i)," i.e., that "best" meets the nine remedy selection criteria taken as a whole. *Id*. at § 300.430(f)(1)(ii), (f)(2) (emphasis supplied).

The administrative record for the Site, the RI/FS approved by the Agency, and EPA's own Proposed Plan demonstrate clearly that Alternative 3 represents the alternative that provides the best balance of tradeoffs among the NCP remedy selection criteria as a whole and, therefore, should be selected as the final OU2 remedy for the Site.

EPA's Proposed Plan itself demonstrates that Alternatives 3 and 4 are essentially equivalent when it comes to satisfying five of the nine remedy selection criteria. In that regard, the Proposed Plan states the following:

(i) *Overall Protection of Human Health and the Environment*: "All of the alternatives except Alternative 1, would provide protection of human health and the environment". Proposed Plan, at 14. Further, "Alternative 3 would eliminate unacceptable risks to human health and ecological receptors through a combination of capping (facility soil), excavation (Hudson Branch sediments) and institutional controls." Clearly, Alternative 3 satisfies this criterion.

(ii) *Compliance with ARARs*: "Alternatives 3 and 4 comply with chemical-specific soils ARARs and the location-specific wetlands and floodplains ARARs and would eliminate exposure…Alternatives 3 and 4 also comply with the surface water ARAR by removing the contaminated sediment containing the source…." Proposed Plan at 15.

More specifically, Alternative 3 complies with New Jersey law, N.J.S.A. 58:10B-12g(1), which *requires* the Department to approve a restricted use or limited use remedial action, as long as the selected remedy is protective of public health and the environment." (emphasis supplied). See also The Site Remediation Reform Act ("SRRA"), N.J.S.A. § 58:10B-12g(1), which provides in pertinent part that NJDEP

> *may not disapprove* … remedial action so long as the selected remedial action meets the health risk standard.

In fact, a brief review of Superfund Records of Decision in New Jersey for sites with chromium or vanadium in soils or sediment indicates numerous sites where EPA implemented a remedy similar to Alternative 3. There are many additional sites in New York (also in Region 2) and across the country where similar remedies have been implemented. Superfund precedent, demonstrated at these other sites, shows that Alternative 3 is compliant with the ARAR criterion. It should also be noted that there are dozens of other State of New Jersey lead remediation sites where capping of residual chromium has been selected as a final remedy.

Alternative 3 clearly satisfies this criterion.

(iii) *Long-Term Effectiveness and Permanence*: "Alternatives 3 and 4 offer long-term effectiveness and permanence through institutional controls as well as capping and excavating of facility soils, respectively, and excavating of Hudson Branch sediments." Proposed Plan at 15. At the public meeting, the EPA confirmed and reinforced this point by stating, in pertinent part that "And we felt very strongly that's why capping was the better alternative for the site". Transcript at 133.

EPA long ago – and has consistently since – concluded that appropriate caps provide adequate long-term protectiveness for low threat wastes, such as metals. See, e.g., 40 C.F.R. § 300.430(a)(1)(iii)(B) ("EPA expects to use engineering controls, such as containment, for waste that poses a relatively low long-term threat"). EPA guidance similarly concludes "For low-level threat waste found at metals-in-soil sites, the presumptive remedy is containment. *Presumptive Remedy for Metals-in-Soil Sites,* EPA, EPA 540-F-98-054, OSWER-9355.0-72FS, PB99-963301, September 1999.

Alternative 3 clearly satisfies this criterion.

(iv) *Reduction of Toxicity, Mobility, or Volume Through Treatment*: EPA has determined, equally with respect to both Alternatives 3 and 4, that "For Alternatives 3 and 4, a treatment technology may be applied to the excavated sediments to facilitate disposal, such as dewatering, that would reduce the mobility or volume of contaminants." Proposed Plan, at 15. As such, Alternatives 3 and 4 are identical with respect to this criterion.

(v) *Implementability*: "The institutional controls under Alternatives 2, 3 and 4 are relatively easy to develop and administratively feasible. Design and implementation of capping (Alternative 3) and excavation (Alternatives 3 and 4) are administratively feasible, as no permits are required for on-site activities, although such activities would comply with substantive requirements of otherwise required permits…Alternatives 3 and 4 would require truck traffic coordination through the residential neighborhoods (traffic impacts would be greater under Alternative 4), and available landfill capacity at an off-site location. Alternative 3 and 4 can be readily implemented from an engineering standpoint and utilize commercial available products and accessible technology." Proposed Plan at 16. Therefore, Alternatives 3 and 4 are essentially equal for this criterion.

Therefore, any reasonable evaluation of both the EPA-approved FS and the discussion in the Proposed Plan of the above-referenced criteria can only yield the conclusion that Alternative 3 is consistent with the NCP.

2. Alternative 3 is More Favorable Relative to the Short Term Effectiveness Criterion

EPA has concluded that "Alternatives 3 is more effective in the short term than Alternative 4 because it limits contact with contaminated soil to a greater extent than Alternative 4. Alternatives 3 and 4 are the same for the Hudson Branch sediments and thus have the same short-term effectiveness." Proposed Plan at 16. EPA appropriately highlighted this point at the July 9, 2014 Public Meeting when EPA's Mr. Sivak stated "we felt the capping, with all the other capping that's already in place at the facility, it was in line with the way the facility is currently structured…it's consistent with the footprint of the facility, it's appropriate for the types of contamination that we have, it reduces the short-term implementability risk by digging it up and taking off site."

EPA is correct in concluding that Alternative 3 is more favorable than Alternative 4 for short term effectiveness.

3. Alternative 3 is More Cost-Effective than Alternative 4

Both CERCLA and the NCP require that remedial actions be "cost-effective." See 42 U.S.C. § 9621(a) (EPA "*shall* select remedial actions . . . which provide for cost-effective response" (emphasis supplied)); *id*. at § 9621(b)(1) (same); 40 C.F.R. § 300.430(f)(1)(ii)(D) ("Each remedial action selected *shall* be cost-effective . . . ." (emphasis supplied)); *The Role of Cost in the Superfund Remedy Selection Process*, OSWER Directive 9200.3-23FS, September 1996 ("*The Role of Cost Guidance*"), at 5 ("CERCLA and the NCP *require* that *every* remedy selected *must* be cost-effective" (emphasis in original)). Alternative 3 is cost effective and satisfies this requirement. Because Alternative 4 clearly is not cost-effective, its selection would be unlawful.

The NCP mandate that any final remedy be "cost-effective" is independent of the requirement that the costs of remedial alternatives be considered and weighed. In light of this "cost-effectiveness" mandate, "costs that are grossly excessive compared to the overall effectiveness of alternatives may be considered as one of several factors used to eliminate alternatives. *Alternatives providing effectiveness and implementability similar to that of another alternative by employing a similar method of treatment or engineering control, but at greater cost, may be eliminated*" at the stage that alternatives are developed and screened. 40 C.F.R. § 300.430(e)(7)(iii). See *id*. at § 300.430(e)(1).

EPA must ensure that the remedial action selected is "cost-effective." Cost-effectiveness is determined by (i) first determining the overall effectiveness of the remedy (by evaluating long-term effectiveness and permanence, reduction of toxicity, mobility or volume through treatment, and short-term effectiveness), and (ii) then comparing overall effectiveness to cost to ensure that the remedy is cost-effective. A remedy is cost-effective if its costs are proportional to its overall effectiveness. See 40 C.F.R. § 300.430(f)(1)(ii)(D).

As discussed above, EPA's Proposed Plan concludes that both Alternative 3 and 4 are protective of human health and the environment and are consistent with ARARs. However, the short-term effectiveness of Alternative 4 is less favorable than that of Alternative 3. The long-term effectiveness of Alternatives 3 and 4 are considered to be similar by EPA under the Proposed Plan.

Accordingly, it is impossible for Alternative 4 to be considered cost-effective because it is two times more costly than Alternative 3 without providing greater overall effectiveness (i.e., its costs are not proportional to its overall benefits or effectiveness).[1] For EPA to conclude otherwise would run counter to the evidence before the Agency in the administrative record and therefore would be arbitrary and capricious.[2] Moreover, because Alternative 4 is significantly more costly, EPA would have to provide an exceptionally strong basis to support selection of Alternative 4 over Alternative 3, which it will be unable to do. See 40 C.F.R. § 300.430(e)(7)(iii).

EPA's guidance on the role of cost in selection of CERCLA remedial actions strongly supports this conclusion. The Agency has determined that "[c]ost is a central factor in all Superfund remedy selection decisions." *The Role of Cost Guidance*, at 1.[3] In

[1] See 40 C.F.R. § 300.430(f)(4) (requiring an assessment of "the best balance of tradeoffs"); *Pub. Citizen, Inc. v. Mineta*, 340 F.3d 39, 55-61 (2d Cir. 2003) (failure of agency to weigh costs and benefits of alternatives, factor in relative advantages and disadvantages of each, and explain why costs were worth the benefits constituted arbitrary and capricious action).

[2] See *State Farm*; *Islander E. Pipeline Co. v. Conn. Dept. of Envtl. Prot.*, 482 F.3d 79, 95-105 (2d Cir. 2006) ("*Islander E. Pipeline Co.*") (failure to adequately examine the relevant record evidence and articulate a rational connection between the facts in the record and the bases for an agency's decision is arbitrary and capricious).

[3] In *The Role of Cost Guidance*, which is intended to clarify "the role of cost as established by existing law, regulation, and policy," the Agency made clear that the

fact, the cost of remedies is a "co-equal mandate" under CERCLA with the statute's emphasis on remedies that maintain protectiveness over time. *Id*. at 2. Accordingly, EPA's cost guidance states that "large sums of money should not be spent" actively managing low level threat wastes that can be reliably contained onsite. See *id*. at 4. In addition, "in practice, decisions typically will turn on the [remedy selection] criteria that distinguish the different cleanup options most." *Id*. at 5.

The proper application of that guidance is exemplified in EPA's June 2014 OU2 Proposed Plan and the selection of Alternative 3 as the Proposed Alternative.

4. Alternative 3 is a "Greener" Remedial Alternative When Compared to Alternative 4

The Proposed Plan does not mention the issue of sustainable (or green) remediation; however, EPA Region 2 places significant emphasis on its "Clean & Green" remediation policy, which was established in March 2009 to ensure consideration of environmental impacts of remediation activities by seeking to employ sustainable practices.[4] The objectives of that policy applies to all Superfund cleanups and which Region 2 has referred to as the "touchstone" for its remedial actions.

However, the OU2 FS appropriately ranked the alternatives relative to "green remediation" and found that Alternative 3 provides the most sustainable and green remedial alternative. Thus, in addition to being the remedy that best achieves and complies with the requirements of the NCP, the selection of Alternative 3 best comports with EPA's green remediation objectives.

"*consistent* application of existing national policy and guidance *will* result in the selection of cost-effective remedies." *Id*. at 1, 2 (emphasis supplied). As such, this guidance should be accorded considerable weight by Region 2 in its final remedial decision for the Site.

[4] See also *Superfund Green Remediation Strategy*, EPA, OSWER and Office of Superfund Remediation and Technology Innovation, September 2010 (calling for incorporation of green remediation factors as part of remedy evaluations starting in fiscal year 2010 and including pursuit of ways to reduce use of energy and minimize GHG emissions). Notably, EPA has concluded that "[g]reen remediation aligns with goals and processes outlined in CERCLA . . . as well as the NCP . . . ," including "remedy selection considerations such as 'the nine criteria' to evaluate alternatives." *Id*. at 3. As such, green remediation principles are an important aspect of the problem to be considered by EPA in selecting a final remedy.

5. Public Sentiment Identifying Alternative 4 as a Preferred Remedy are Due to Putative Concerns about Residual Radioactive Slag Material and is at Odds with Longstanding EPA CERCLA Policy

Public sentiment is clearly against SMC and the SMC Site. The closure of SMC operations marked the departure of the largest employer and tax payer in Newfield. During the July 9, 2014 Public Meeting, the source of the negative environmental public sentiment was illustrated to be the slag pile. For example, even though EPA announced on several occasions that the slag pile was not to be discussed or addressed during the Public Meeting, the slag pile (and its various references by the public such as "elephant", "tiger", "hill", "radiation", "restricted area", etc.) was referenced 51 times, whereas chromium, the principle contaminant for OU2, was mentioned only 36 (and most of those chromium references were made by the EPA). NJDEP also delivered a statement concerning pending litigation involving jurisdictional issues relating to the slag pile cleanup.

It is imperative to note that OU2 is separate and distinct from the slag pile (and OU3 perchlorate, all media), physically, chemically, and jurisdictionally. The selection of the remedial alternative must apply only to OU2, consistent with the 9 NCP evaluation criteria, and consistent with Superfund protocol, precedent, and procedure. The EPA must not allow public concerns about the slag pile to affect OU2 remedial decisions. Any OU2 decisions that incorporate or afford any weight to public interest or concerns about the slag pile would render the Superfund process for the site procedurally meaningless and defective.

The EPA can certainly urge the agencies asserting jurisdiction (NJDEP, NRC) over the cleanup to improve their public information program, or to advance the slag pile cleanup, but EPA cannot properly allow the slag pile issues, or sentiment related thereto, to apply at all to OU2.

6. There is No ARAR for Sediment and Therefore EPA Applied the Appropriate PRGs; Further, NJDEP Regulations Expressly Allow for the Application of Site Specific Cleanup Criteria to the Areas at Issue

In his testimony at the Public Meeting held on July 9, 2014, Richard Tonetta, the Solicitor for the City of Vineland asserted that cleanup at parks "…has to go to a residential quality; not industrial quality". Transcript at 83-84. Mr. Tonetta's testimony was referring to Burnt Mill Pond, a recreational area owned by the City of Vineland. That pond is downstream of the Hudson Branch, an area where sediment is being remediated as part of the site remedy to address ecological concerns. Mr. Tonetta was asserting that the NJDEP residential soil remediation standards should be applied as an ARAR for contamination in pond sediment.

Mr. Tonetta's statement is not supported as a matter of law or regulation.

First, as noted at the hearing, the media at issue is sediment, not soil. The NJDEP does not have adopted cleanup standards for sediment. See N.J.A.C. 7:26D. This fact was noted at the public hearing by EPA "There are no state ARARs for sediments". Transcript at 111.

Second, even were cleanup standards to exist for sediment, and they do not, NJDEP regulations also recognize that it is appropriate to develop alternative remediation standards for a site that is being used for recreational purposes. As noted in Appendix D to the NJDEP remediation standards:

> An alternative remediation standard may be based on use of the site for recreational purposes. Recreational purposes are site-specific uses that do not reflect either a residential or nonresidential land use scenario. Alternative standards may be based on site-specific land use scenarios that effect the amount time that people are likely to spend at a site that is designated for recreational use. There are two basic types of recreational land use, active and passive, that may be considered. Examples of active recreational land use are sports playing fields and playgrounds. Examples of passive recreational land use are walking or bike trails. The approval of an alternative remediation standard for recreational land use will be contingent on the use of proper institutional controls to ensure the continued use of the site for the proposed recreational [use].[5]

The applicable regulatory and land use scenario show that the process EPA followed in this case, using a risk assessment taking into account the recreational use of the land as a basis to determine the appropriate remediation standard for sediment, is wholly consistent with NJDEP regulations. Moreover, because the site was acquired with Green Acres money and according to Mr. Tonetta is on the Open Space Inventory, it is subject to institutional controls requiring that it be maintained for a recreational use.

NJDEP Green Acres rules also do not require remediation to a specific standard. Pursuant to N.J.A.C. 7:36-8.2, only requires that any contaminated areas on a potential Green Acres site be "addressed to the Department's satisfaction". As the lead agency charged with oversight of the cleanup, EPA has unequivocally established that the proposed remediation is consistent with Superfund requirements and is protective of human health and the environment. Additionally, as noted above, NJDEP can be satisfied with the selected remedy which is based upon site specific remediation standards supported by a conservative risk assessment, both of which take into account the recreational use of the site.

[5] It should be noted that Mr. Tonetta confirmed that the reasonably anticipated use of the site both now, and in the future is recreational. Burnt Mill Pond "…is a green acres park…This park is also, just so everyone is aware, part of the state of New Jersey Recreational and Open Space Inventory."

For these reasons, and contrary to any statements made at the Public Meeting to the contrary, the proposed remedy as it relates to Burnt Mill Pond is fully consistent with New Jersey regulatory requirements.

7. Consideration of Dredging of Burnt Mill Pond, Outside and Beyond Properly Established PRGs as Part of the OU2 Cleanup is Inconsistent with CERCLA and the NCP

The EPA-approved OU2 Risk Assessment, which was very conservatively calculated, studied the risk of contaminants allegedly attributable to the Site in Burnt Mill Pond and determined that no risk above EPA criteria exists for either ecological or human receptors. RI at 78. This risk analysis included the very conservative assumption that all chromium is in the form of hexavalent chromium (which it is not), in order to ensure results that are extremely safe. Because hexavalent chromium is not absorbed through human skin, the potential human health risk associated with hexavalent chromium is via a pathway of incidental ingestion of sediments. Specifically, the approved risk assessment assumed a human recreational exposure at Burn Mill Pond 52 days per year (2 days a week in the summer, 1 day a week in the spring, fall, and winter), which yielded a risk of 2×10^{-5}, well within EPA's defined acceptable risk range of 10^{-4} to 10^{-6}. Pursuant to Superfund procedure and practice, Burnt Mill Pond sediment remediation cannot be considered because no elevated risk exists.

In order to understand the sensitivity of the calculations, more conservative recreational exposure scenarios were studied by TRC's risk assessors, following the July 9, 2014 Public Meeting. More specifically, TRC evaluated an even greater/more conservative human recreational exposure assumption of 350 days per year, leading to a calculated risk of 9×10^{-5}, still within the EPA's "safe range" (this evaluation also assumed that all chromium persists in its hexavalent elemental form). Thus, this sensitivity analysis shows that, even under the most extremely conservative assumptions, there is no unacceptable human health risk at Burnt Mill Pond.[6]

There were concerns expressed during the Public Meeting because the Proposed Plan used the term "recreational/trespasser" to describe the exposure scenario. EPA uses this term because portions of Burnt Mill Pond are accessible only from private land; so some exposures considered would be by "trespassers". However, the EPA appropriately indicated at the Public Meeting that "Perhaps it may be a better plan to not focus so much on the title of recreational/trespasser "…because reasonable (in fact conservative) calculations of risk indicated that there is no appreciable risk for recreational scenarios." Transcript at 110.

[6] At the July 9th Public Meeting, one of the presenters raised a concern over EPA's use of the term "Trespasser" to intimate that recreational users of the Burnt Mill Pond area would be exposed to greater than allowable contaminant levels from a risk perspective. No such issue exists. Whether defined as a "Recreational Visitor" or Trespasser, the exposure of inhabitants to Site contaminants is well within acceptable levels of risk pursuant to Superfund.

Vineland indicated at the July 9th Public Meeting that they have received approximately $1 million of NJDEP funds to repair Burnt Mill Dam, and refill Burnt Mill Pond, returning the Pond to the conditions studied in the RI/FS.

Vineland reportedly dredges Burnt Mill Pond approximately every 5 years to reduce sedimentation. Based on available information, the last maintenance dredging was 2006 (following the cessation of manufacturing operations at the SMC facility). Vineland determined, in their 2006 study of Burnt Mill Pond to support the dredging project, included as Appendix I, that no contamination was present there. Unlike the exhaustive data quality QA/QC required for the RI/FS data collected for Superfund, the sample location, depth, collection and analysis methods, and data validation is not included in the Vineland report. Of course, the RI/FS and Superfund process similarly found no risk.

It is critical to note that Burnt Mill *Branch* contributes flow from an area two (2) times larger than from Hudson Branch, based on an analysis of the watershed topography. This indicates that Burnt Mill *Branch* contributes the majority of flow of sediments and water to Burnt Mill Pond. The RI determined that Burnt Mill Branch sediments contained copper, manganese, mercury, and nickel, above the most stringent screening criteria. The RI also determined that Burnt Mill Pond sediments contained copper, manganese, mercury, and nickel above the most stringent screening criteria. Therefore, the metals in sediments in Burnt Mill Pond are primarily related to background, non-SMC related sources.

Review of historical topographic maps indicates that the 1946 version of the USGS map calls what is now Burnt Mill Branch, Manaway Branch. Further in 1946, Burnt Mill Pond did not exist. Burnt Mill Pond is first seen in the 1953 version of the USGS map. Burnt Mill Pond was named for an industrial mill that operated at the location of the current pond. Based on the stream naming in the historical USGS maps, it is possible that the Mill may have existed up to sometime between 1946 and 1953. The footprint of the industrial operations, and residual contaminants from the industrial operations are not known. Some residences were built on top of land likely used historically for industrial purposes. To TRC's knowledge, the contamination of the land and pond from this industrial activity has not been studied. The OU2 RI/FS process or resultant selected remedy cannot properly be used to study nor cleanup contamination off-Site or from non-SMC sources. Fortunately, following the robust RI/FS process, no risk was identified with any metals in Burnt Mill Pond.

The fate and transport analyses in the RI/FS determined that ponds, such as Burnt Mill Pond, naturally create sediment deposition (as water slows, sediments deposit out of suspension). This fact belies Vineland's concern that chromium moved up the pond slopes, versus settling downward. It is further noted that NJDEP does not have promulgated residential (or industrial) standards for chromium, so Superfund cannot lawfully apply such standards as ARARs. Similarly, metals concentrations up the banks of Hudson Branch are present at lower concentrations than at settling points in Hudson Branch. Additionally, as articulated above, many metals on the banks of Hudson Branch are present at background concentrations. Superfund cannot require cleanup of background conditions unrelated to a release of hazardous substances.[7]

CONCLUSION

For reasons cited above, the selection of Alternative 3 as EPA's Preferred Alternative is consistent with CERCLA and the NCP, supported by the administrative record, and is consistent with relevant and applicable CERCLA remediation guidance and precedent. The administrative record, including the FS for the Site, clearly demonstrates that Alternative 3 is the remedial alternative that provides the best balance of the nine remedy selection criteria and fulfills the CERCLA requirement for cost-effectiveness.

TRC requests that EPA give careful consideration to these comments and include them, together with the Appendix attached hereto, in the administrative record for the Site. Any questions that EPA may have regarding these comments, and any request for further information, may be directed to the undersigned.

Respectfully submitted,

TRC ENVIRONMENTAL CORP.

Marc Faecher
Senior Vice President

cc: Michael Sivak, Section Chief – New Jersey Remediation Division, EPA Region 2
Patrick J. Hansen, P.E., Vice President TRC
(Both of the above w/Attachments via Email only)

Attachments:

Appendix I Vineland Engineer's Letter to EPA dated June 6, 2006

[7] The request of Vineland to dredge Burnt Mill Pond sediments seems to be based on a desire to use Superfund dollars to perform routine maintenance dredging to enhance recreational value. EPA cannot allow the use of Superfund related monies to fund unrelated maintenance projects.

APPENDIX I
VINELAND'S LETTER

Pennoni

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS

June 6, 2006

CVIN 0601

David J. Battistini, P.E., L.S., P.P.
Engineering Department, City Engineer
640 E. Wood Street,
Post Office Box 1508
Vineland, New Jersey 08210

RE: Burnt Mill Pond
Dredging Project
City of Vineland, New Jersey

Dear Mr. Battistini:

Pennoni Associates Inc. ("Pennoni") is pleased to present this letter report, which includes our findings, documentation to support analysis, opinion and conclusions. Please find the attached tables and a copy of the laboratory report for your reference.

Pennoni conducted sediment core sampling activities on April 14, 2006 in accordance with the Pennoni's Sediment Sampling and Analysis Plan dated April, 2006. Sample locations were selected based upon a grid design developed from site design plans and are included as Attachment A. The soil types encountered were logged for each boring location and soil boring logs are included as Attachment B. Site photos are provided as Attachment C.

Each boring was advanced to approximately two (2) feet below the bottom grade of the pond using a manual core sampler. Samples were collected by placing a three-foot long by ¾-inch diameter metal tube into the bottom surface of the pond and driving it down using a 3-lb hammer. Samples were designated as SED-1 through SED-5. Each core of material was composited prior to sampling. Samples SED-4 and SED-5 were individually composited for grain size and Total Organic Carbon ("TOC"). In addition, samples SED-4 and SED-5 were composited together (Comp1-4/5). The samples were collected in laboratory prepared glassware, recorded on a Chain of Custody form and immediately transferred into a cooler kept at 4 degrees Celsius. The samples were transported via a courier to Severn Trent Laboratories, Inc. ("STL") of Edison, New Jersey, a New Jersey Department of Environmental Protection ("NJDEP") certified laboratory to be analyzed. Sampling analysis included grain size, percent moisture, Total Organic Content ("TOC"), Semi-volatile Organic Compounds ("BNs"), Priority Pollutant Metals ("PP Metals"), Priority Pollutant Pesticides ("PP Pest"), and Polychlorinated Biphenyls ("PCBs").

A summary of the analytical results are provided as Table 1 in Attachment D. A copy of the analytical report from STL Laboratories, Inc. is included as Attachment E.

Based upon the results of this investigation, no exceedances of the Non Residential Direct Contact Soil Cleanup Criteria ("NRDCSCC") or the Residential Direct Contact Soil Cleanup Criteria ("RDCSCC") were present for any of the samples analyzed. Based on these results, the dredged soil should fulfill the requirements for proper disposal at most certified facilities. Pennoni recommends that the information provided in these results be submitted to a disposal facility to determine if the proper requirements have been met.

If you should have any questions, please contact this office at (856) 547-0505.

Very truly yours,

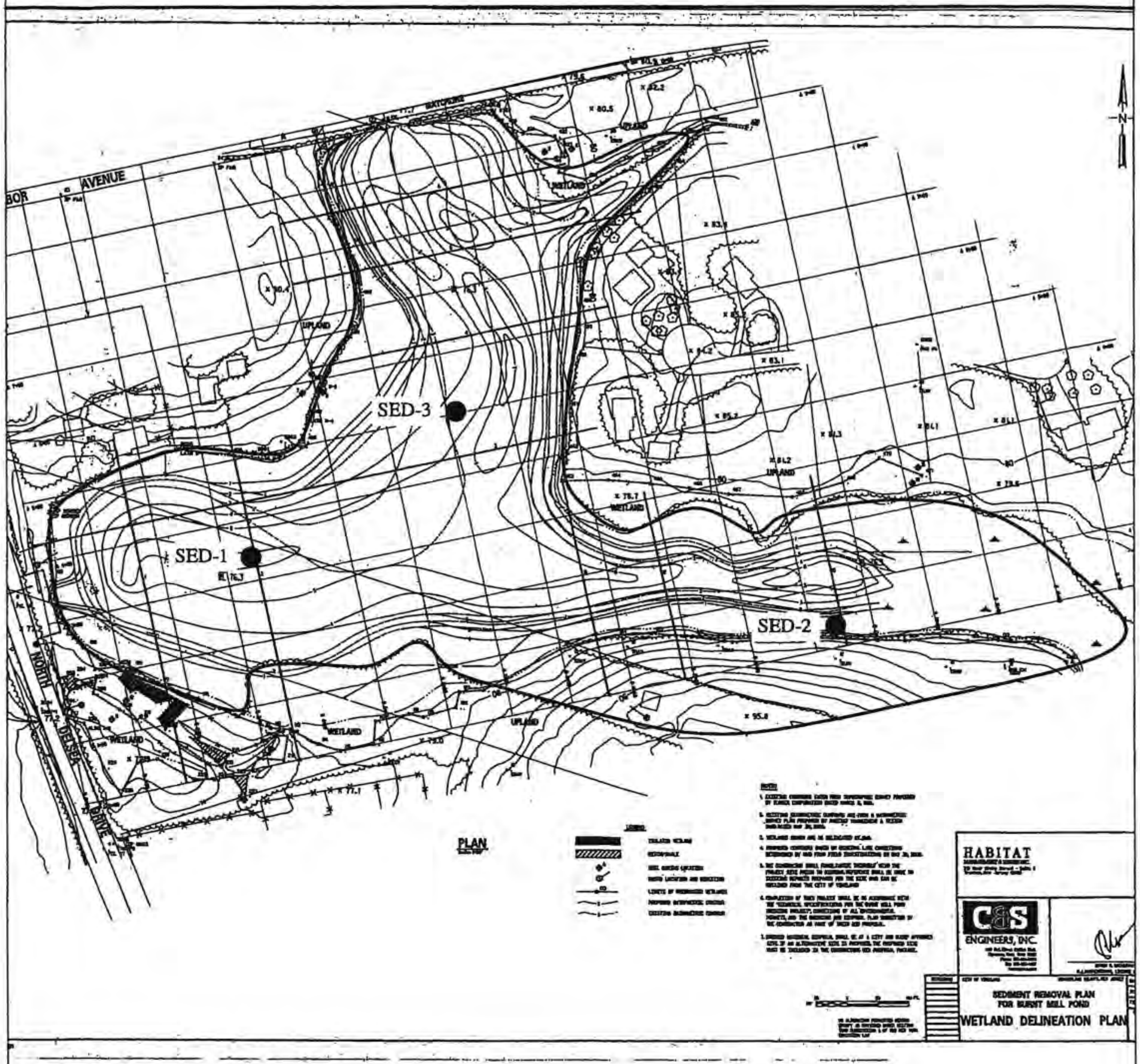
PENNONI ASSOCIATES INC.

Craig D. Fisher
Graduate Environmental Scientist

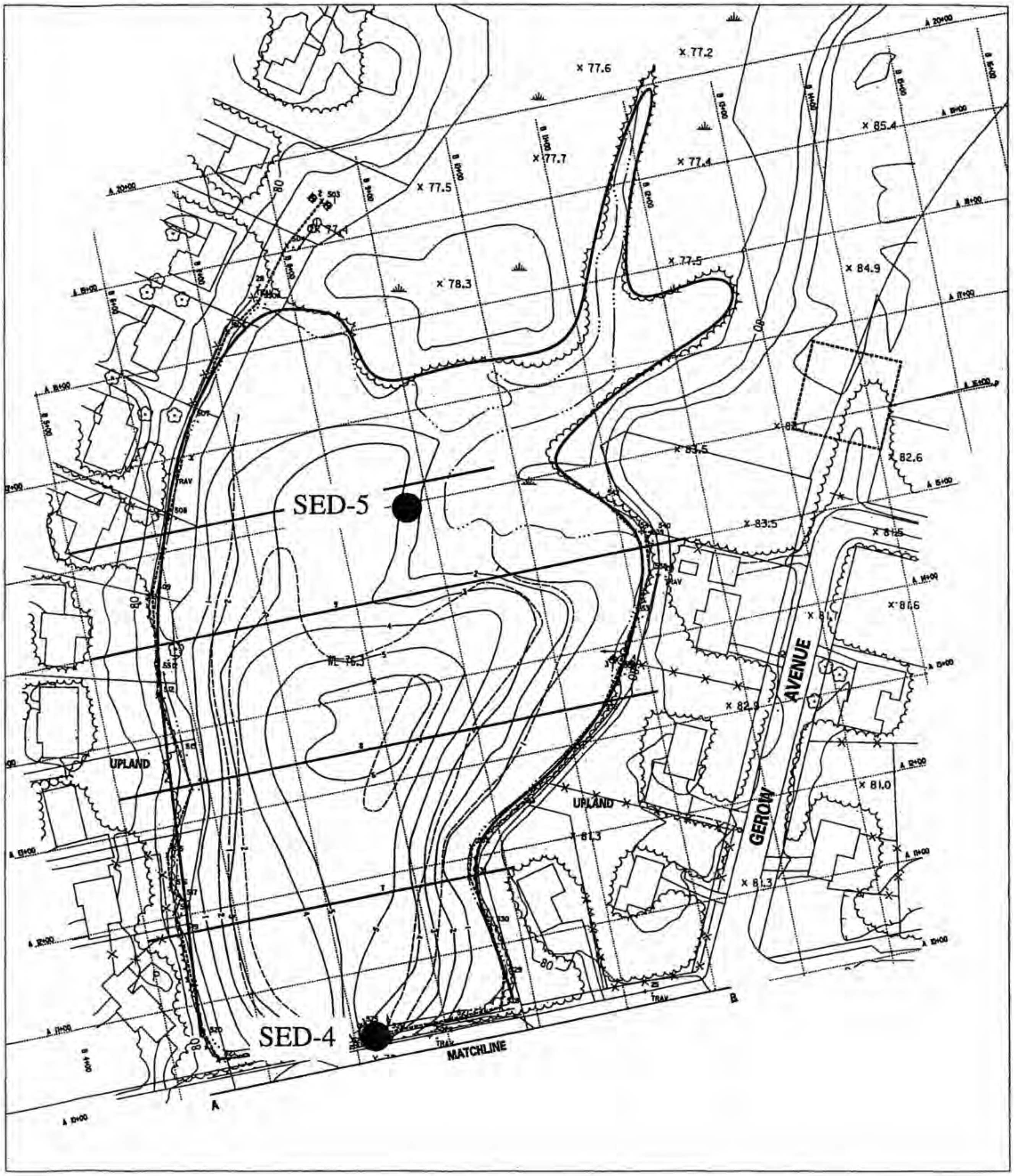
Chris A. Purvis
Environmental Division Manager

Attachments

M:\PROJECTS\C\Cvin (City of Vineland)\0601 (Burnt Mill Pond)\summary letter.doc



Pennoni PENNONI ASSOCIATES INC. 515 GROVE STREET HADDON HEIGHTS, NEW JERSEY 08035	DREDGE SAMPLING AND ANALYSIS BURNT MILL POND GEROW AVE AND NORTH DELSEA DRIVE VINELAND, NEW JERSEY 08210
Job No. CVIN 0601 / Scale: N.T.S.	SAMPLE LOCATION PLAN- A



Pennoni

PENNONI ASSOCIATES INC.
515 GROVE STREET
HADDON HEIGHTS, NEW JERSEY 08035

DREDGE SAMPLING AND ANALYSIS

BURNT MILL POND
GEROW AVENUE AND NORTH DELSEA DRIVE
VINELAND, NEW JERSEY 08210

Job No.	Scale:	
CVIN 0601	N.T.S.	SAMPLE LOCATION PLAN- B

Table 1 (Continued)
Burnt Mill Pond
Delsea Drive
City of Vineland, New Jersey
Sediment Sampling Analysis

SAMPLE ID	SED-1	SED-2	SED-3	COMP-1 4/5	NJDEP RDCSCC	NJDEP IGWSCC
SAMPLE TYPE	GRAB	GRAB	GRAB	GRAB		
SAMPLE MATRIX	SOIL	SOIL	SOIL	SOIL		
DATE COLLECTED	4/14/2006	4/14/2006	4/14/2006	4/14/2006		
CONCENTRATION	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Metals						
Aluminum	2,320	1,100	616	2,300	NS	NS
Antimony	U(3.40)	U(1.30)	U(1.30)	U(2.30)	14	NS
Arsenic	U(3.10)	U(1.20)	U(1.20)	U(2.10)	20	NS
Barium	96.9 B	20.6 B	38.9 B	94.4	700	NS
Beryllium	0.52 B	0.19 B	0.20 B	0.67 B	2	NS
Cadmium	U(0.35)	U(0.13)	U(0.14)	0.35 B	39	NS
Calcium	1040 B	585 B	633 B	1,070 B	NS	NS
Chromium	68.20	70.50	20.60	3.0 B	240	NS
Cobalt	4.80 B	U(0.94)	2.6 B	17.1 B	NS	NS
Copper	4.20 B	1.50 B	1.1 B	3.5 B	600	NS
Iron	1,760	290	608	2,010	NS	NS
Lead	14.50	2.80	3.0	17.1	400	NS
Magnesium	328 B	159 B	115 B	277 B	NS	NS
Manganese	122	25	66	167	NS	NS
Mercury	0.14	0.03 B	0.04 B	0.32	14	NS
Nickel	5.90 B	1.90 B	1.90 B	7.6 B	250	NS
Potassium	141 B	36.1 B	44.2 B	88.0 B	NS	NS
Selenium	U(3.30)	U(1.30)	U(1.30)	U(2.20)	63	NS
Silver	U(0.83)	U(0.32)	U(0.33)	U(0.56)	110	NS
Sodium	319 B	109 B	U(98.5)	U(167)	NS	NS
Thallium	U(1.70)	U(1.30)	U(1.30)	U(1.10)	2	NS
Vanadium	18.0 B	16.9	6.0 B	5.10 B	370	NS
Zinc	15.9 B	5.0 B	5.7 B	32.6	1,500	NS

RDCSCC-NJDEP Residential Direct Contact Soil Cleanup Criteria, dated May 12, 1999.
IGWSCC-NJDEP Impact to Groundwater Soil Cleanup Criteria, dated May 12, 1999.
Bold and highlighted entries indicate concentrations which exceed the NJ RDCSCC
B - Reported value is less than the Reporting Limit but greater than the Instrument Detection Limit.
U-Compound was not detected at or above the laboratory method detection limit. MDLs are given in parentheses.
NS- No NJDEP SCC
HIGHLIGHTED and BOLD entries indicate an exceedence of the most stringent NJDEP SCC.

Table 1
Burnt Mill Pond
Delsea Drive
City of Vineland, New Jersey
Sediment Sampling Analysis

SAMPLE ID	SED-1	SED-2	SED-3	COMP-1 4/5	NJDEP RDCSCC	NJDEP IGWSCC
SAMPLE TYPE	GRAB	GRAB	GRAB	GRAB		
SAMPLE MATRIX	SOIL	SOIL	SOIL	SOIL		
DATE COLLECTED	4/14/2006	4/14/2006	4/14/2006	4/14/2006		
CONCENTRATION	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Semi-Volatile Organic Compounds						
1,2,4-Trichlorobenzene	U(1.20)	U(0.045)	U(0.045)	U(0.077)	68	100
1,2-Dichlorobenzene	U(12)	U(0.45)	U(0.45)	U(0.77)	5,100	50
1,3-Dichlorobenzene	U(12)	U(0.45)	U(0.45)	U(0.77)	5,100	100
1,4-Dichlorobenzene	U(12)	U(0.45)	U(0.45)	U(0.77)	570	100
2,4-Dinitrotoluene	U(2.30)	U(0.089)	U(0.091)	U(0.15)	1	10
2,6-Dinitrotoluene	U(2.30)	U(0.089)	U(0.091)	U(0.15)	1	10
2-Chloronaphthalene	U(12)	U(0.45)	U(0.45)	U(0.77)	NS	NS
2-Methylnaphthalene	U(12)	U(0.45)	U(0.45)	U(0.77)	NS	NS
2-Nitroaniline	U(23)	U(0.89)	U(0.91)	U(1.50)	NS	NS
3,3'-Dichlorobenzidine	U(23)	U(0.89)	U(0.91)	U(1.50)	2	100
3-Nitroaniline	U(23)	U(0.89)	U(0.91)	U(1.50)	NS	NS
4-Bromophenyl-phenylether	U(12)	U(0.45)	U(0.45)	U(0.77)	NS	NS
4-Chloroaniline	U(12)	U(0.45)	U(0.45)	U(0.77)	230	NS
4-Chlorophenyl-phenylether	U(12)	U(0.45)	U(0.45)	U(0.77)	NS	NS
4-Nitroaniline	U(23)	U(0.89)	U(0.91)	U(1.50)	NS	NS
Acenaphthene	U(12)	U(0.45)	U(0.45)	U(0.77)	3,400	100
Acenaphthylene	U(12)	U(0.45)	U(0.45)	U(0.77)	NS	NS
Anthracene	U(12)	U(0.45)	U(0.45)	U(0.77)	10,000	100
Benzo(a)anthracene	U(1.20)	U(0.045)	U(0.045)	U(0.077)	0.9	500
Benzo(a)pyrene	U(1.20)	U(0.045)	U(0.045)	U(0.077)	0.66	100
Benzo(b)fluoranthene	U(1.20)	U(0.045)	U(0.045)	U(0.077)	0.9	50
Benzo(g,h,i)perylene	U(12)	U(0.45)	U(0.45)	U(0.77)	NS	NS
Benzo(k)fluoranthene	U(1.20)	U(0.045)	U(0.045)	U(0.077)	0.9	500
bis(2-Chloroethoxy)methane	U(12)	U(0.45)	U(0.45)	U(0.77)	NS	NS
bis(2-Chloroethyl)ether	U(1.20)	U(0.045)	U(0.045)	U(0.077)	0.66	10
bis(2-chloroisopropyl)ether	U(12)	U(0.45)	U(0.45)	U(0.77)	2,300	10
bis(2-Ethylhexyl)phthalate	U(12)	0.22 J	U(0.45)	U(0.77)	49	100
Butylbenzylphthalate	U(12)	U(0.45)	U(0.45)	U(0.77)	1,100	100
Carbazole	U(12)	U(0.45)	U(0.45)	U(0.77)	NS	NS
Chrysene	U(12)	U(0.45)	U(0.45)	0.016 J	9	500
Dibenz(a,h)anthracene	U(1.20)	U(0.045)	U(0.045)	U(0.077)	0.66	100
Dibenzofuran	U(12)	U(0.45)	U(0.45)	U(0.77)	NS	NS
Diethylphthalate	U(12)	U(0.45)	U(0.45)	U(0.77)	10,000	50
Dimethylphthalate	U(12)	U(0.45)	U(0.45)	U(0.77)	10,000	50
Di-n-butylphthalate	U(12)	U(0.45)	U(0.45)	U(0.77)	5,700	100
Di-n-octylphthalate	U(12)	U(0.45)	U(0.45)	U(0.77)	1,100	100
Fluoranthene	U(12)	U(0.45)	U(0.45)	U(0.77)	2,300	100
Fluorene	U(12)	U(0.45)	U(0.45)	U(0.77)	2,300	100
Hexachlorobenzene	U(1.20)	U(0.045)	U(0.045)	U(0.077)	0.66	100
Hexachlorobutadiene	U(2.30)	U(0.089)	U(0.091)	U(0.15)	1	100
Hexachlorocyclopentadiene	U(12)	U(0.45)	U(0.45)	U(0.77)	400	100
Hexachloroethane	U(1.20)	U(0.045)	U(0.045)	U(0.077)	6	100
Indeno(1,2,3-cd)pyrene	U(1.20)	U(0.045)	U(0.045)	U(0.077)	0.9	500
Isophorone	U(12)	U(0.45)	U(0.45)	U(0.77)	1,100	50

SAMPLE ID	SED-1	SED-2	SED-3	COMP-1 4/5	NJDEP RDCSCC	NJDEP IGWSCC
SAMPLE TYPE	GRAB	GRAB	GRAB	GRAB		
SAMPLE MATRIX	SOIL	SOIL	SOIL	SOIL		
DATE COLLECTED	4/14/2006	4/14/2006	4/14/2006	4/14/2006		
CONCENTRATION	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Naphthalene	U(12)	U(0.45)	U(0.45)	U(0.77)	230	100
Nitrobenzene	U(1.20)	U(0.045)	U(0.045)	U(0.077)	28	10
N-Nitroso-di-n-propylamine	U(1.20)	U(0.045)	U(0.045)	U(0.077)	0.66	10
N-Nitrosodiphenylamine	U(12)	U(0.45)	U(0.45)	U(0.77)	140	100
Phenanthrene	U(12)	U(0.45)	U(0.45)	0.022 J	NS	NS
Pyrene	U(12)	U(0.45)	U(0.45)	0.032 J	NS	NS
Tentatively Identified Compounds	238.4	18.37	14.51	84.2	NS	NS

RDCSCC-NJDEP Residential Direct contact Soil Cleanup Criteria, dated May 12, 1999.
IGWSCC-NJDEP Impact to Groundwater Soil Cleanup Criteria, dated May 12, 1999.
U-Compound was not detected at or above the laboratory method detection limit. MDLs are given in parentheses.
J- The result is less than the quantitation limit but greater than zero; the concentration is an approximate value.
NS- No NJDEP SCC.
HIGHLIGHTED and BOLD entries indicate an exceedence of the most stringent NJDEP SCC.

Table 1 (Continued)
Burnt Mill Pond
Delsea Drive
City of Vineland, New Jersey
Sediment Sampling Analysis

SAMPLE ID	SED-1	SED-2	SED-3	COMP-1 4/5	NJDEP RDCSCC	NJDEP IGWSCC
SAMPLE TYPE	GRAB	GRAB	GRAB	GRAB		
SAMPLE MATRIX	SOIL	SOIL	SOIL	SOIL		
DATE COLLECTED	4/14/2006	4/14/2006	4/14/2006	4/14/2006		
CONCENTRATION	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
PCBs						
Aroclor-1016	U(0.23)	U(0.09)	U(0.091)	U(0.16)	0.49	NS
Aroclor-1221	U(0.23)	U(0.09)	U(0.091)	U(0.16)	0.49	NS
Aroclor-1232	U(0.23)	U(0.09)	U(0.091)	U(0.16)	0.49	NS
Aroclor-1242	U(0.23)	U(0.09)	U(0.091)	U(0.16)	0.49	NS
Aroclor-1248	U(0.23)	U(0.09)	U(0.091)	U(0.16)	0.49	NS
Aroclor-1254	U(0.23)	U(0.09)	U(0.091)	U(0.16)	0.49	NS
Aroclor-1260	U(0.23)	U(0.09)	U(0.091)	U(0.16)	0.49	NS
Aroclor-1262	U(0.23)	U(0.09)	U(0.091)	U(0.16)	0.49	NS
Aroclor-1268	U(0.23)	U(0.09)	U(0.091)	U(0.16)	0.49	NS
Pesticides						
4,4'-DDD	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	3	50
4,4'-DDE	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	2	50
4,4'-DDT	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	2	500
Aldrin	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	0.040	50
alpha-Hexacholrobenzene	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	0.66	100
beta-Hexacholrobenzene	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	0.66	100
Chlordane	U(0.23)	U(0.09)	U(0.091)	U(0.16)	NS	NS
delta-Hexacholrobenzene	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	0.66	100
Dieldrin	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	0.042	50
Endosulfan I	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	340	50
Endosulfan II	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	340	50
Endosulfan sulfate	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	NS	NS
Endrin	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	17	50
Endrin aldehyde	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	NS	NS
Endrin ketone	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	NS	NS
Lindane	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	0.52	50
Heptachlor	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	0.15	50
Heptachlor epoxide	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	NS	NS
Methoxychlor	U(0.023)	U(0.009)	U(0.0091)	U(0.016)	280	50
Toxaphene	U(0.23)	U(0.09)	U(0.091)	U(0.16)	0.10	50
General Chemistry						
Total Organic Carbon	93,300	36,600	35,800	52,300	NS	NS

RDCSCC-NJDEP Residential Direct contact Soil Cleanup Criteria, dated May 12, 1999.
IGWSCC-NJDEP Impact to Groundwater Soil Cleanup Criteria, dated May 12, 1999.
U-Compound was not detected at or above the laboratory method detection limit. MDLs are given in parentheses.
NS- No NJDEP SCC
HIGHLIGHTED and BOLD entries indicate an exceedence of the most stringent NJDEP SCC.